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DANISH FOREIGN OFFICE JOURNAL

NUMBER 25

1957

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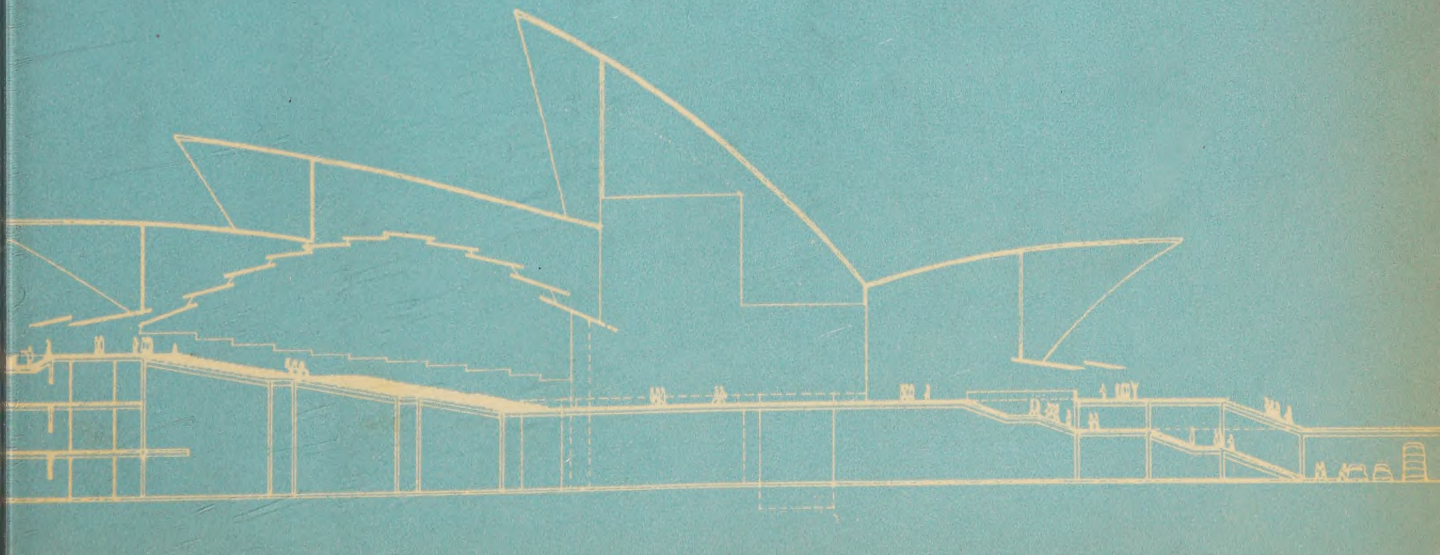

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COMMERCIAL & GENERAL REVIEW

TRENDS IN SCHOOL ARCHITECTURE

In the last decade, Danish education authorities have carried out a large-scale building programme which, while providing scope for certain architectural ideas, has given rise to some others. The bodies financially responsible have, of course, always had the last word in regard to the activities of architects and educationists; but the team-work of all three has been noticeable over the years. By Hans Henning Hansen. ..... *page 11*

SCHOOL IS A HOME FROM HOME

The modern class-room is more than desks, seats, and blackboards. It must contain all the things from which children learn and many of those which they learn about, and it must also have the feel of a living-room. Current Danish school-building programmes have provided scope for some successful furnishing experiments. Danish factories make all forms of school equipment, from seats and chalk to gymnastic apparatus and loudspeaker installations. By Niels Albretsen..... *page 16*

PITARAK OVER ANGMAGSSALIK

Sometimes the weather of Greenland, as the saying goes, is not fit to turn a dog out in. Sudden Föhn winds, veritable hurricanes, influence the patterns of day-to-day life; every little peep-hole, for example, must be solidly shuttered. A "squall" of this kind is only humorous afterwards. By Franz Berliner. ..... *page 19*

FROM FLAX STRAW TO TABLE CLOTH

The production of flax and linen goods in Denmark is run principally on cooperative lines and is efficiently organized, with close contact between primary producer and mill. By P. Sonne Frederiksen..... *page 22*

THE VIKING GRIPPING BEAST

The Viking ornamentation which we have called the gripping beast style merits attention by reason of its artistic quality and the technical perfection evident in its application. The complicated designs of this style have been popularized in a Danish animated cartoon which was produced for the 150th anniversary celebrations of the National Museum by the archeologist Thorkild Ramskou and the cartoonist Holger Philipsen. By Thorkild Ramskou. ..... *page 24*

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THE EGG AND YOU

Measures governing Danish food exports have again been intensified: date-stamping of eggs has been made compulsory in a new quality drive which guarantees the consumer against bad eggs and assists the industry in its competition with subsidized producers in other countries. By Knud Ravnkilde..... *page 28*

THEY STOP SHORT AT GIRAFFES

Fish would seem to be the only creatures which cannot tolerate air travel. The carriage of other live animals is an important factor in the recent striking expansion in air transport. By Erik Frandsen..... *page 30*

IT'S THE TEETH THAT MATTER!

Saw blades of a type made and invented by a small Danish firm have cut their way into every continent. By K. Henning Pedersen *page 32*

A PECULIAR COCKTAIL—AND OTHER DRINKING HABITS

A pint of spirits a day has become a "thimbleful" on festive occasions—though foreigners should beware of the innocuous-looking "snaps"! Its producers, incidentally have, entered the lists against the British by exporting whisky and gin. Denmark—where every glass of beer is a contribution to art and science—exports a variety of other beverages, as well as raw materials and machinery for their production. By Poul Trier Pedersen..... *page 33*

THE INVESTMENT CLIMATE IN DENMARK

Owing to a highly skilled labour force and her whole social structure, Denmark offers excellent facilities for investment. Invested foreign capital operates on equal terms with national industries. By Jørgen Jensen.. *page 34*

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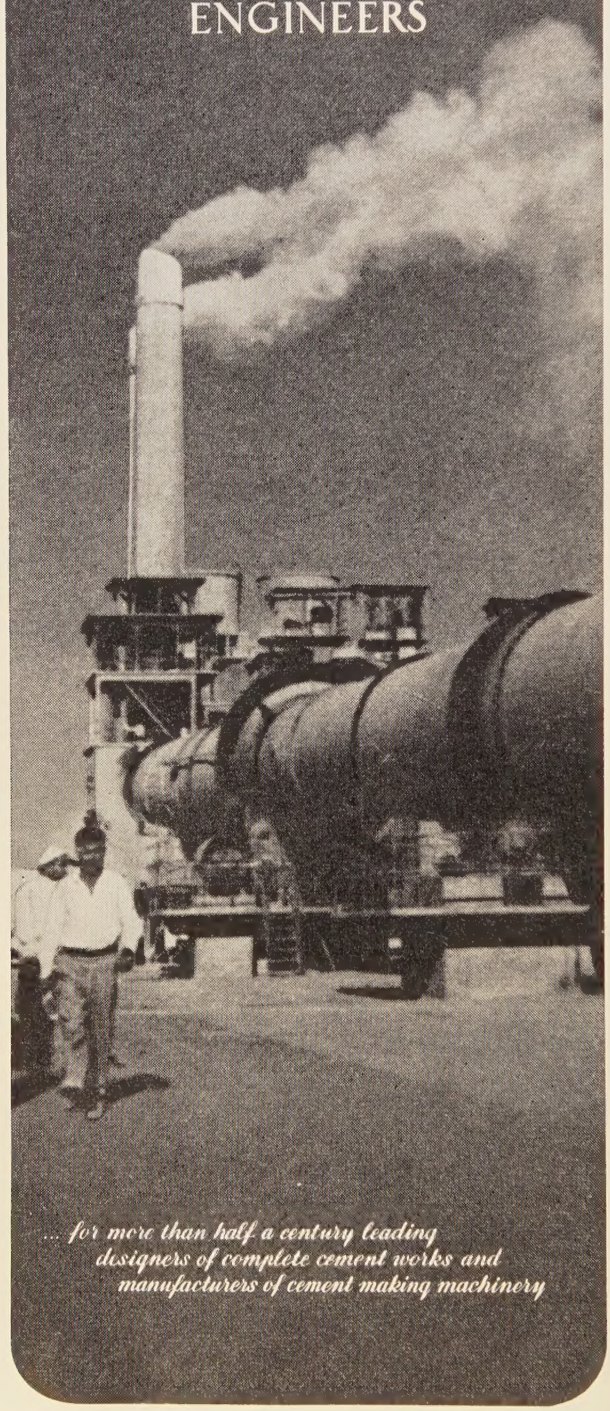

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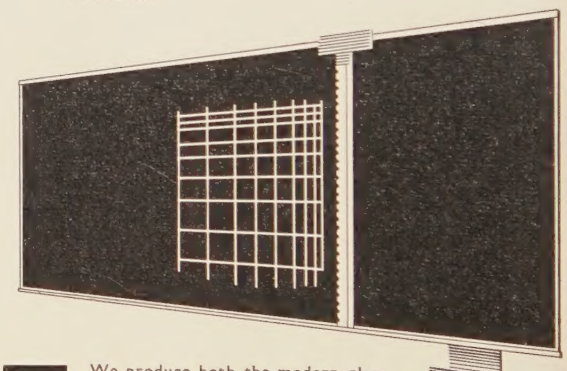

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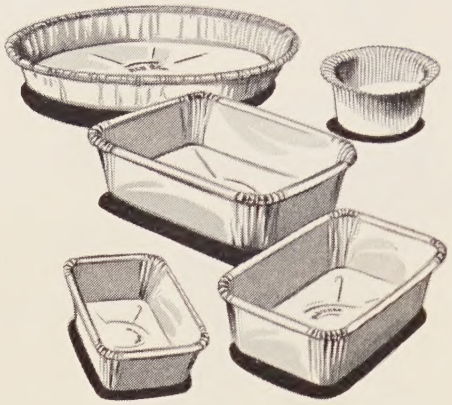

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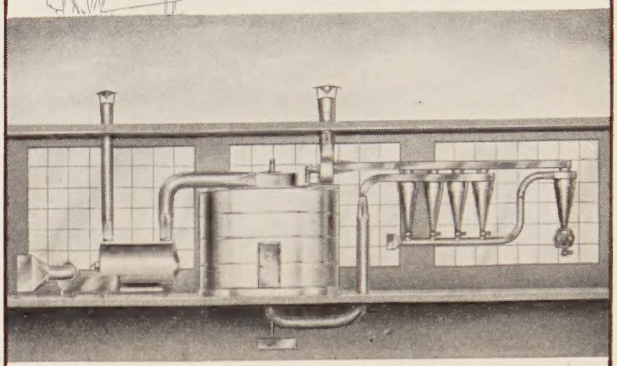

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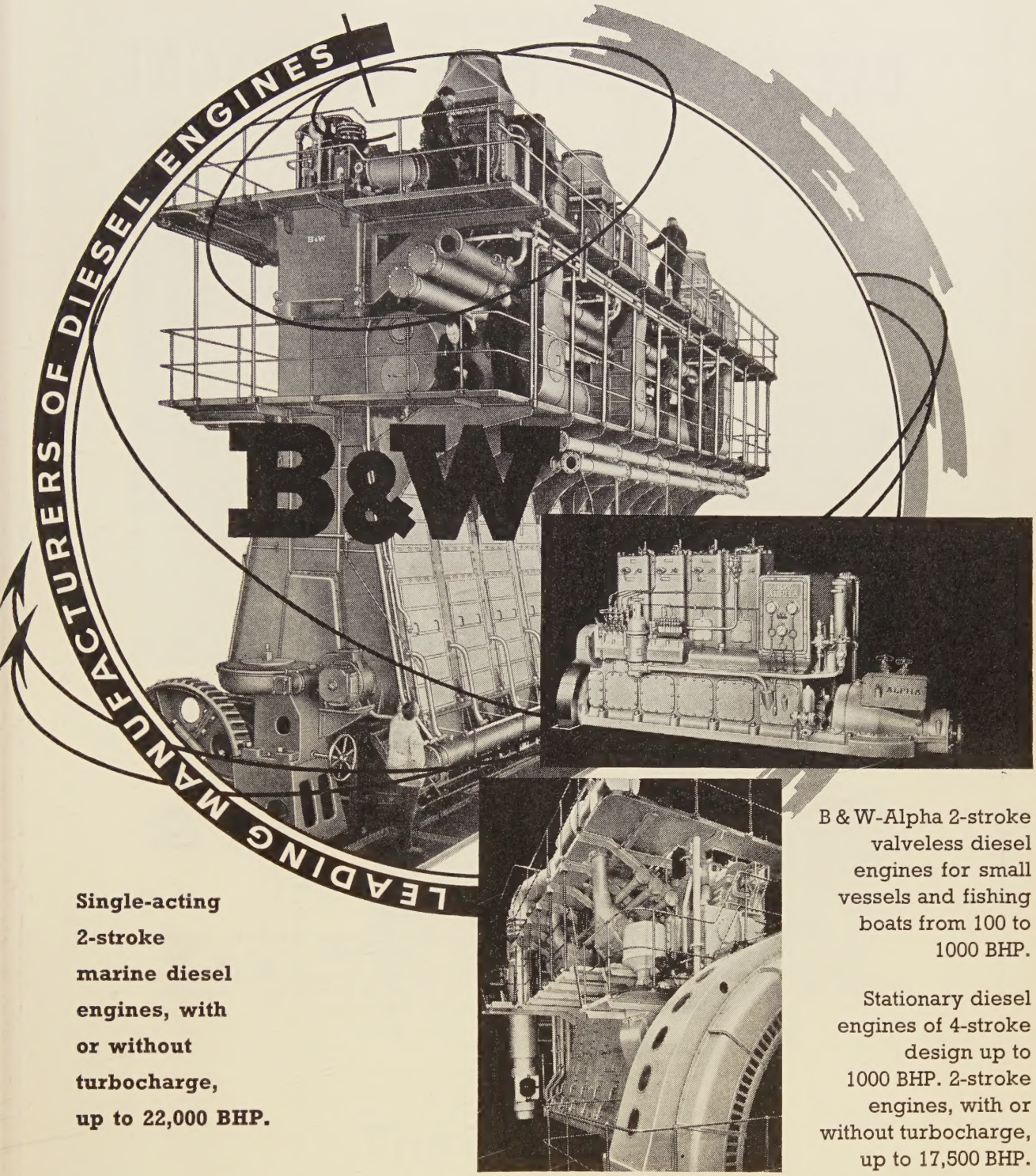

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DANISH FOREIGN OFFICE JOURNAL
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Trends in School Architecture

By Hans Henning Hansen

School Architecture Adviser to the Ministry of Education

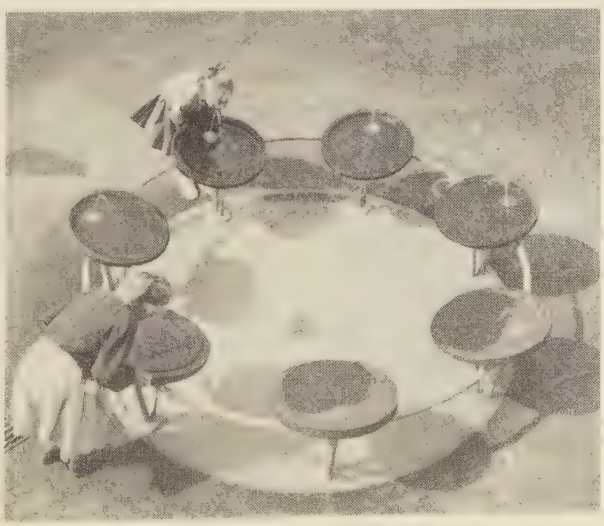
In the last decade, Danish education authorities have carried out a large-scale building programme, which, while providing scope for certain architectural ideas, has given rise to some others. The bodies financially responsible have always had the last word in regard to the activities of architects and educationists; but the team-work of all three has been noticeable over the years

Writing a year or two ago of Danish architects, a British architect stated that they were sound in taste and craftsmanship but otherwise pedestrian. In terms of the great architectural ideals this characterization is undoubtedly correct, at least as regards school architecture. In Denmark there are few wealthy patrons, barely enough for the painters and sculptors, and the architects usually have to be content with commissions for clients.

School architecture clearly reflects the development of liberal ideas from the beginning of the eighteenth century to the present day, but at the same time building activities show that economic forces have throughout set the pace of the development. The same forces—that is to say, the clients—have also had a greater influence on the characteristic features of the various building groups than have differences in the use of the buildings or variations in the stylistic conceptions of architects.

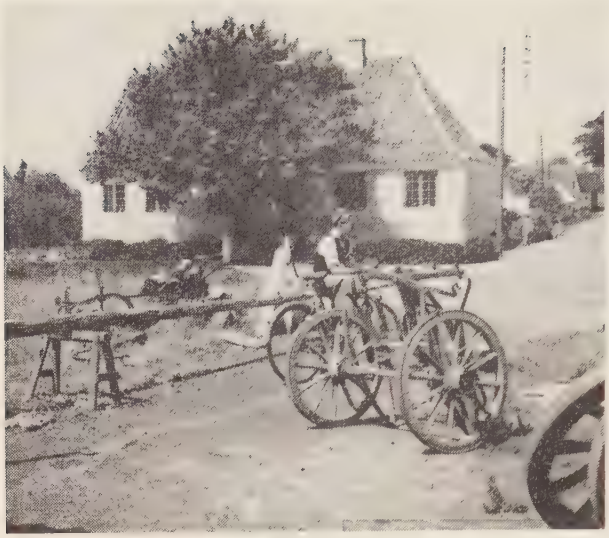
Commissioning Experts

In the country it has always been a tradition for the client to take a personal share in the building, at least as a hodman, a house being something all could apprehend. Members of small communities stand in a personal relationship to things and are accustomed to basing their actions on their own experience. Plans and architects have been largely imposed on this sort of building by the authorities; when an architect is chosen, he is unlikely to be a stranger. It is different in towns, where the size of the community has necessitated a less personal and more administrative approach to building. This is a matter for the expert, and whether one or another is chosen is not crucial. As Danish architects, moreover, tend to congregate in the capital, as close as possible to the educational centre and the central administration, it has become traditional practice in provincial towns to commission architects for school buildings in open competition. The practice has resulted in a high architectural standard of urban as compared with other schools.



Non scholae, sed vitae

The grammar schools, many of which are State schools, have been built for and by public officials. The number of commissions has been comparatively small; and the State—before any other administrative branch —has had its own architects, the professors of the Aca-



Royal Estate School, 1721 (Lille Heddinge, Zealand)

The hall in the Katrinedalsskole in Copenhagen (1934, architect, Kaj Gottlob)

Village-like intimacy in a contemporary town school (Graadybskolen, Esbjerg, 1957, arch., Peer Hougaard Nielsen and C. J. Nørgaard Pedersen)

demy and the Royal Building Inspectors. The buildings were intended to serve academic education, and generally speaking their architects match this requirement. The Education Act of 1937 has resulted in a programme of rural school-building far exceeding in volume that produced by any other two decades. Owing to the war, moreover, it has been concentrated in a period of one decade. The State's share in this building has been indirect, in prescribing the layout of class-rooms and in making building grants; the 1,300 rural district authorities have individually taken the initiative and contracted for the schools.

Royal Estate Schools

Building traditions in Denmark followed certain definite principles. In West Jutland there are red-brick structures with sea-weed thatching and white cornices; in Funen the frame-work is tarred, in Zealand colour-washed; straw-thatching varies according to locality. The old skill in thatching has now almost lapsed, and it is difficult to perceive any local differentiation in recent village schools. The plans may reveal a tendency to design schools in the L shape of a smallholding or with a main block and two wings like a large farm; but if any common feature is evident from the outside it is that the school should endeavour to stand out from the rest of the village buildings, a desire connected with the fact that in many villages the school and the church are the only public buildings.

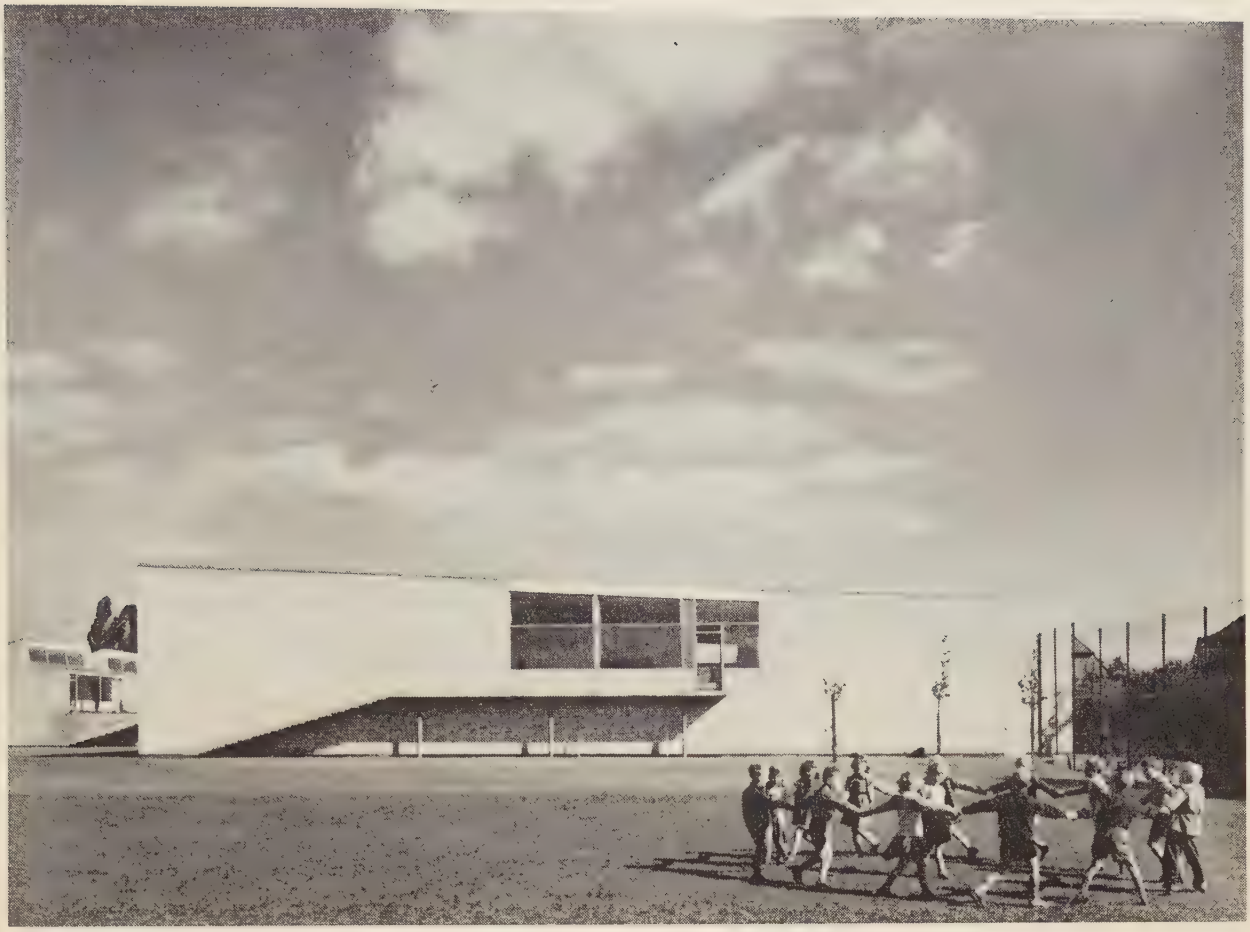
In the desire that the school should be distinguishable from neighbouring buildings by symmetry or by special materials (red bricks and tiled roof) and that it should have distinction, there is probably a survival from an earlier period. In 1721, King Frederik IV built 240 schools on his estates; and amid the half-timbered village buildings with their mud walls and thatched roofs these brick-built structures with tiled roofs, oak windows, and inscriptions over the doors will have been awe-inspiring. It is a remarkable fact that this building enterprise had architectural implications which have remained vital for 200 years, though it is only very recently that we have become aware of the underlying administrative achievement, which is perhaps the most interesting feature.

The schools were all built to one plan, and the 114 in Zealand were assigned to the same building contractor. Whether the sum of 600 rigsdaler per school was cheap or not by contemporary standards is of minor importance, but the method is one which is calculated to achieve cheapness. It has been revived in a rather different way during the last few years.

Economical Standard Types

In the last century, and three times during this century, the central administration has prepared type designs for village schools; building to these plans, however, has not been reconcilable with the desire of the local authorities to decide for themselves, nor has there been any demonstrable economic advantage associated with their employment. But the application of standard types is gaining ground in present-day rural building in other ways.

A number of architectural firms have succeeded in working out plans for schools of a type which could be employed in various districts, and which in their room arrangement and general layout could be built so cheaply



Western gable-wall of the gymnasium-wing of a new school in a Copenhagen suburb (Munkegaardsskolen, Vangede, 1956; arch., Prof. Arne Jacobsen)

Comprehensive school (primary, secondary modern, and grammar), in the Copenhagen suburb of Buddinge (1957). Has been called "a clarion call of Danish school architecture". Architects, Eva and Nils Koppel, Royal Building Inspector

Hillerslev village school (1957). Being close to the 700-year-old village church, the site was subject to regulations for the protection of ancient buildings. (Arch., Niels Albretsen)

that their price alone appealed to several local authorities about to build. The fact of a number of clients independently approaching the same architect with the same commission establishes a basis for rationalization and cheapness. The motive underlying the appearance of these school types is an economic one which carries a risk that the tendency may become permanent; and although there is clearly idealism as well, the main emphasis is not on what is educationally the best.

While school-building in rural districts is due largely to an educational extension (in time and subjects) and to an endeavour to equalize conditions in the country with those in the towns, in urban districts it is due to a great extent to the increase in population. There has been a notable increase in Copenhagen and the larger provincial towns, whereas the population in the country has remained fairly static.

School Palaces and Ladies' Shoes

Even before the passage in 1903 of the Secondary School Act, a number of good typical schools had been built in Copenhagen and some provincial towns, with a simple layout and an architecture coloured by the imitative style which characterized the latter half of the nineteenth century. With the introduction of general secondary education and the growing demand for accommodation for education in science and the crafts, the simple layout applicable to a building with many uniform rooms was bound to prove inadequate and new types arise. Slogans such as "hall school", "central-corridor school", "side-corridor school", and "pavilion school" marked an approach to type formation, but in fact were reflections of the give and take of a debate which is still going on among educationists, financial administrators, and architects.

The most remarkable of these types is perhaps the hall-type which arose in 1928. In plan it is the result of an attempt to save floor space by providing access to as many rooms as possible from a central hall. At the same time a place is provided where all the children at the school can be accommodated for morning assembly, and where public meetings can be held and polling booths erected.

The object of planning a large school as a multi-storey structure built round a hall is thus to achieve the maximum return for a reasonable expenditure; but ironically enough this is the very type most frequently abused as "school palaces". A large, architecturally designed room has a psychological effect, whether it is a church, a theatre, or a court of law; and to an ordinary taxpayer the feeling of being small can easily intensify and explode when it occurs in a school. Doubt about the need for clothes to hang on brass hooks, for doors to be of teak, for tables in the school kitchen to be covered with stainless steel, and for the floor in the cloak-room to be tiled combines with recollections of school days and the supremacy of teachers to produce a kick—the expletive "school palace"!

Economical though the multi-storey school with a hall may be, feeling in recent years has turned so much against big buildings that the large schools (and urban schools for 1,000–1,500 children are still the most common) have to be designed to the same principle where possible as a lady's shoe—large inside and small outside. The hall school has not been in evidence the last few years, and multi-storey schools have receded in favour of low buildings.

Results of Open Competition

At the same time the prospective architects are given freer hands, though they are bound by general sentiments and vogues when the commissions, as so often in the case of school-building for provincial towns, are competitive. Projects are submitted anonymously, and in order to win it is necessary to please; the prize is the carrying out of the project. It sounds simple; but when it is borne in mind that an ordinary judging committee is comprised of one-third professional experts, one-third educationists,

and the remainder economically minded laymen, then it is plain that the winning of approval for a project requires in the author a talent for seizing the intangible thing, "the spirit of the time". Perhaps it is this which is also called art; at any rate, some of the best recent schools have been built to competing projects.

To judge from the latest results of open competitions, the "pavilion school", which appeared about 1910 and swiftly disappeared again, is in for a revival. How long it will last will depend on a trial of strength between architects and educationists on the one hand, and economic forces on the other.

High Standards of Grammar Schools

Primary schools, in town and country, have developed steadily for 200 years from a rather primitive level to become a well-developed part of the social structure. The grammar schools, which for at least 800 years have, directly and indirectly, meant a great deal to the Danish nation, have had a more fluctuating development; from being educational centres for a chosen few they have become the final stage in the general educational system, open to children from all social classes.

Numerically, this group of schools is not large (at present just over 70 in the country as a whole); but architecturally the schools occupy a special position. Even a century ago, when only buildings of real importance were erected with the aid of architects, a number of grammar schools were built to designs by leading architects. C. F. Hansen, professor and director of the Academy of Arts, designed a new school in Copenhagen, and at the same time a number of schools were built in the provinces in the same dignified classical style.

If it is only in recent years that the State has occupied a dominant place as a client for higher schools, it has been a tradition, ever since the schools ceased to be church schools in 1809 and became centres of higher education, to employ as architects the Royal Building Inspectors and men with the outlook of the Academy. This high-ranking institution, whose judgment in artistic matters is final, includes the majority of grammar-school architects among its members; and although the layout of rooms in their buildings follows fairly closely the same development as that of primary schools in the towns, their style is influenced on the whole by cool maturity and moderation. In their development these schools have marked the stage reached, without pointing directly to new departures.

Approximation of Various Grades

The ideas of a comprehensive school which underlay the Education Act of 1903 are still alive; and both the Act of 1937 and the proposed amendments to it which have been discussed in recent years point the way to a closer integration of the various categories of school. Communications have provided the facilities, and economic developments have made it necessary, for rural authorities to pool their resources in providing larger schools planned on the same educational lines as urban schools; and as the democratic form of society presupposes and promotes an approximation between the primary school and higher education, the large primary and urban school must become the centre of this integration.

In buildings, this group is already the richest and most interesting; and with the building programme planned for the near future there is a fair chance that the favourable development will continue.

A new way with geography. In the yard of the Copenhagen Tjornegaardsskole is a map of Denmark which is kept in constant repair by the children

A circular arrangement of desks can provide intimate contact between children and teacher. The trapezoid desk-tops lend themselves to such arrangements, though rectangular desks are admirable for the purpose

School is a Home from Home

By Niels Albretsen

Member of the Danish Architects Association

The modern class-room is more than desks, seats, and blackboards. It must contain all the things from which children learn and many of those which they learn about, and it must also have the feel of a living-room. Current Danish school-building programmes have provided scope for some successful furnishing experiments. Danish factories make all forms of school equipment, from seats and chalk to gymnastic apparatus and loudspeaker installations

The primary feature of any school is the class-room, where the children spend their working hours and most of their school time. It follows that it should provide an appropriate setting for the daily work of the class and that its equipment, in form and colour, should have an educative and formative influence on the child mind.

The old-time school desk consisting of desk and form fixed together matched the old rigid form of teaching, with spelling and tables by chorus. The children were arranged as in ranks in their rather cramped wooden desks, from where they could easily be kept under observation to ensure that they all recited in time.

Modern education, too, requires an arrangement in rows, but it also requires flexibility: the possibility of sitting in small groups for group studies, or in a circle when equidistance from the subject is desirable, as in art and nature. By occupying a position in the centre the teacher can dramatize a narrative or reading and make better contact with the class as a whole than he can when the furthest child is 25 feet away.

The desired flexibility is achieved by means of separated seats and desks and requires a class-room big enough to facilitate variation in furnishing. The standard Danish class-room accommodating 36 children measures only 25ft by 20ft (6× 8 m), which gives an area of roughly $13^1/_2$ square feet (1.3 sq m) per child. The spatial and educational drawbacks to this size are appreciated and it is the aim to reduce the number of children where possible to 24–30.

Fitting Furniture to Children

The Ministry of Education and the State Building Research Institute, in a recently published study of the class-room and its function, recommend an increase in the size of both room and desks. They also draw attention to the extra area which could be made available for teaching, especially the youngest classes, if corridor space were utilised.

The double desk is customary in the standard Danish class-room. The Research Institute favours a desk measuring 3ft 6ins by 1ft 9ins (110 cm × 55 cm), believing that a length-width ratio of 2:1 is convenient for use in various groupings. An increase in the width would correspond to the greater desk space now required for work in both primary and secondary schools.

Modern school furniture must satisfy four requirements: it must be correctly designed for health and education; it must be hard-wearing and cheap in upkeep; it must be easy to keep clean; and it must be readily movable for various uses.

Health is the most important point. It is of great importance that height of seat and desk should be properly adapted to the various age groups. Ministerial directives, operative now for many years, provide for the selection of the best size for every child at the beginning of the school year.

Attention Seats

The rapid expansion of the Danish furniture industry which has taken place during the last 10–15 years has also extended to school furniture, which has kept up with the large school-building programme in this period. The bigger schools are not afraid of experimenting and a new furniture type, if found

Scratching his ear, he thinks that perhaps he ought to have solved his woodwork problem himself

suitable, has every chance of being serially manufactured.

Two architects, Professor Steen Eiler Rasmussen and Mr. Kai Lyngfeldt Larsen, have designed (for Rungsted School in 1952) a new style of desk and seat, made from tubular steel with a pressed veneer seat and back and a plastic desk surface. Desk and seat have been highly successful and are in use in many schools in Denmark and abroad. In addition to extensive original study and research, the design is based on health surveys made in Britain at Birmingham University and research by the Royal Air Force on attention seats.

The result is an admirable seat, comfortable to sit on and providing suitable support in all positions. The distinctive feature is the back, which is carried down to support the loins and provides good rest in forward positions as when writing. The design of the desk top makes it eminently suitable for group use.

Convenience of Steel Furniture

Steel furniture is becoming increasingly popular in Danish schools, because it is both cheaper in upkeep and more mobile than wooden furniture. As most steel furniture is made for stacking, the problems of storage and transport are minimal. Ease of transport is important when seats are required for use in school halls, and it is economical if class-room seats can also be used there.

Many Danish factories specialize in the manufacture of school furniture and make handsome and convenient units. The tubular-steel material is usually phosphatized and stove-enamelled to resist hard usage. The tube ends are tipped with rubber or plastic in order to protect the floors and deaden the sound. The noise problem has also been tackled by covering the legs of desks and seats with plastic.

Seat and back are usually made from pressed veneer, with outer veneer of varnished teak or mahogany. The desk top is generally of board and has a glued-on, hard plastic sheet and lists of natural wood. The style at its purest can be seen in the furniture at Munkegaard School, in the Copenhagen suburb of Gentofte, designed by Professor Arne Jacobsen. The desk top and shelf here consist of one piece of laminated bentwood board, the working surface being covered with plastic board. The laminated board is mounted on a mat chromium-plated, tubular-steel frame. Seat and back are also in one piece.

Desks with attached seats similar to the old wooden desks are also made, but nowadays in the form of a tubular-steel frame adjustable for height of seat, back, and desk top, as well as for tilt. It is a type in which the ideal ratio can be obtained, though it affords no scope for flexible grouping and can appear out of place in the home-like environment which the modern class-room seeks to achieve.

Here the desks have been put together for small work groups. Bookshelves replace radiators under the windows, the room being radiation-heated from the ceiling. Right, a door opening on to a garden

Certain designs of seats are obtainable ready made. These chiefly consist of seats for use in halls: folding seats of wood and steel, both in long attached sections for assembly in lengths, and neat and attractive individual units with the right arm-rest widened for writing on. Some types with a rack under the seat are useful for articles used in, say, singing classes.

In the school kitchen, there's no fun like making omelettes

Globes are another Danish production

Blackboard No Longer Black

One of the teacher's principal accessories is the blackboard. Many Danish junior class-rooms have two: the usual one on the wall in front, and an extra one hung low down at the side or back of the room. The children can display their talent on the latter, which is often squared and lined, and there the teacher can draw models and patterns which need not be rubbed off for a few days.

A blackboard, though in daily use, must keep its mat, non-reflecting surface and its ability to take chalk. Danish factories make excellent blackboards, usually is the form of a plywood frame with specially treated blackboard canvas stretched on it. "Boards" of rough glass—sometimes coloured—are occasionally used. The "blackboard" as such is no longer general: the delights of colour have been let loose in the class-room. Boards may be black, white, green, brown, red, or blue, to match the colours of the walls, and forming part of the general colour scheme.

Lined and figured boards are available as required and are useful for teaching needlework, cooking, drawing, singing, and so on.

The modern class-room is more than a collection of desks, seats, and blackboard. It must have the feel of home and be something of a living-room; at least the junior class-room should. It must have room for all the things from which children learn and some of those which they learn about. There should be wall boards for charts and reproductions and for small displays of children's work.

Under the Education Act of 1937, every Danish school must be provided with certain special rooms, including gymnasium, woodwork room, school kitchen, library, needlework room, and, in secondary schools, physics and chemistry rooms, an art room, and a singing room.

The gymnasium and woodwork room are furnished with standardized equipment designed in accordance with Ministry of Education standards, supplemented by directives given by the local technical inspector.

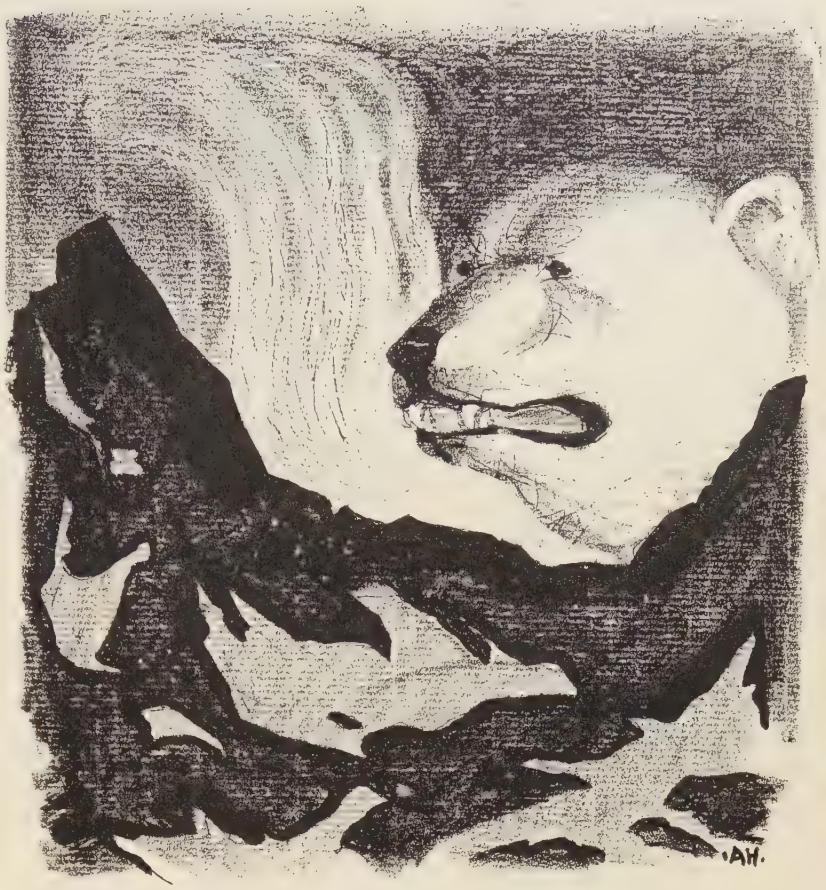
A standard school kitchen is designed as three uniform sections, equipped for three "families" of six girls each. Each "family" has its own kitchen table and sink, dining table, and cupboard with utensils belonging to them. Each girl also has her own range, all 18 being grouped in the middle of the room. There is a general washing room in addition. Although the equipment to some extent is standardized, each school kitchen is individually constructed.

The equipment of other special rooms is also subject to the Ministry of Education and its technical inspectors, though here only the initial project of room and equipment, and their design, requires approval.

All these special class-rooms, their furnishing, dimensions, and design, are amended in the light of new experience and new developments.

Model Animals in Education

A Danish engineer has specialized in making model animals, which among other uses are being widely employed as educational media in the audio-visual phase of teaching deaf children. The picture is from the California School for the Deaf (State of California Board of Education).



In his drawing the artist has the Polar bear symbolizing the growling Pitarak's rising from behind the mountains. The surrounding peaks already send out white "smoke" indicating a hurricane – and within a few moments the storm will sternly beat against the valley's settlement

Pitarak over Angmagssalik

By Franz Berliner; drawings by Anton Hansen

Sometimes the weather of Greenland, as the saying goes, is not fit to turn a dog out in. Sudden Föhn *winds, veritable hurricanes, influence the patterns of day-to-day life; every little peep-hole, for example, must be solidly shuttered. A "squall" of this kind is only humorous afterwards . . .*

On a hill in a wood we stood looking round. There was a flagstaff on it, and a seat; all very Danish. The hill rose above the tree-tops, and down below the wood red roofs peeped out. Beyond them was the sea, blue in spring but with white fangs.

The sky was a clear blue and the sun was shining. In the wood it had been calm, but up here the wind ruffled our hair, blew at our faces, and made us screw up our eyes.

"Daddy, will there soon be a *pitarak?*" said my boy, looking up at the blue sky.

"No," I had to explain, "here in Denmark there are no *pitarak;* nothing but little squalls. It was only in Angmagssalik—".

"Let's talk about Angmagssalik!"

He loves to talk of early memories, and remembers many things about the place where he spent his first three years. And so we walked homeward, talking of *pitarak* . . .

What is a *pitarak?* In matter-of-fact language it is a mountain wind blowing across the ice-cap, the vast arctic waste of central Greenland. But in human terms it is the most fantastic of gales; an outsize hurricane.

Many people will be familiar with the Beaufort scale of wind force, a table of measurement with a maximum figure of 12, denoting a hurricane. Experts have tried to relate this scale to the more precise measurement of knots. A knot is the equivalent of one nautical mile (6,080 feet) per hour. They have reckoned out that a wind force of 12 corresponds to about 68 knots. All weather stations use wind gauges called anemometers, which indicate wind force in knots.

"*Kissing*" *the Hundred Mark*

It is as well they do. In Greenland the Beaufort scale with its maximum of 68 knots would be woefully inadequate. During a severe *pitarak* at Angmagssalik the anemometer registered a wind force of over 90 knots, and once during the night, as the radio operator put it, the needle even "kissed" the hundred mark. That was a wind!

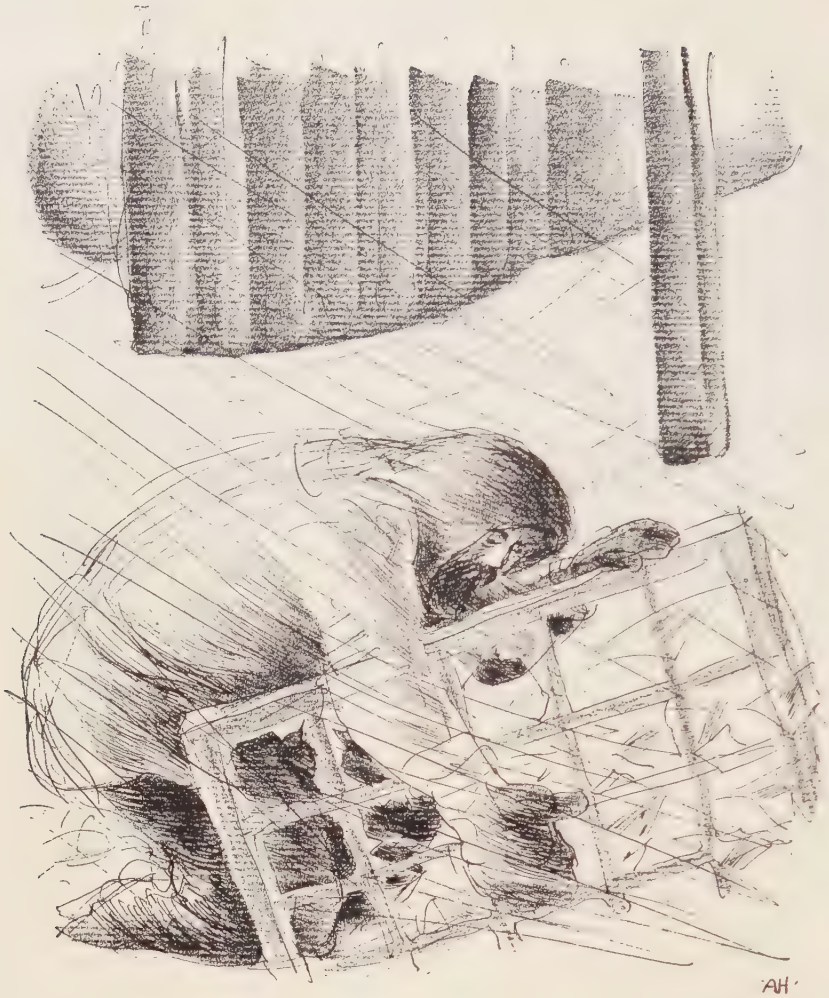
A *pitarak* is always dry. It never brings rain or snow; at least no more than the drift snow which it may pick up on its course. At such a time earth and sky will become one. The atmosphere at Angmagssalik is very dry, and during a *pitarak* the humidity may drop down to about 30.

The *pitarak*, strange though it may sound, can be a warm wind, rather like an Alpine *Föhn*. The rise in temperature may be quite remarkable: as much as 10 degrees Centigrade in a very short time. Or it may be a cold wind, the temperature remaining significantly unchanged; though a few degrees of frost in a gale of such violence can be icy, bursting pipes, pumps, and even radiators.

The barometer, too, behaves singularly. The patterns of behaviour vary; but one of the commonest is for the barometer to rise abruptly, after falling steadily for many hours. At such times the radio operators will exchange looks, and say: "We've got it coming to us now, all right!"

But supposing that, unlike radio operators, you have no instruments to warn you? Awkwardly enough, the *pitarak*'s behaviour is so varied that it may come without any warning at all. But often there is a preliminary warning when the sky becomes cloudless all at once, except perhaps for a blob or two of pink floating overhead. Possibly the mountains to the north-west will begin as they say, to smoke: there will be drifting snow on the top; a long white banner streaming in the clear blue sky from every peak.

It can be hard to know whether to take it seriously. One stands at the window, wondering what others are thinking. Ah, now the minister has put up his shutters;



. . . I found myself walking with the empty window frames in my hands as the glass flew over the ground in bits and pieces . . .

now the hospital; now somebody else! Well, we had better do the same...

Before long the whole settlement is shuttered and ready for anything. Every house is a fortress which must fight its own battle with the hurricane, while patiently waiting for it to stop.

And then the *pitarak* flies howling across the settlement; the first wild gusts rattle at the shutters, the dogs snuggle together for shelter, men stay indoors.

I imagine the *pitarak* having its individual song for each house, all according to where it stands. Ours stood fairly well sheltered below the mountain-side; and in a way we liked listening to the wind. It had a definite whistling note under the eaves: a long-drawn-out, wild song, which occasionally would rise to an angry, deafening rumble, shaking the whole house.

Saving the Cold Frame!

There was a time when we got no warning. Waking up one summer morning, we lay listening. Sure enough it was there, that whistling note! Oh, but it was incredible; the *pitarak* could not be here now, on a sunny summer's morning, early in July! A glance out of the window, and sure enough: dust and grit were rising into the air in whirling columns, mixed with paper and miscellaneous litter. The *pitarak* had stolen a march on the settlement while it was asleep. Shutters began to clatter.

It was not a bad *pitarak;* only a few houses put up their shutters. Still, I thought I would go out and save the panes of the cold frame in the garden. I got them off and carried them alongside the house. It was fairly sheltered here, and I regretted having removed them. Ridiculous, I thought, carrying frame windows in, now that it had practically stopped blowing...

Turning the corner, I went straight into the wind. And as I did so I found myself walking with the empty window frames in my hands, as the glass flew over the ground in bits and pieces—far away. A warning not to make fun of the *pitarak!* It felt stupid, walking into the house with the empty frames. "So you managed to save the cold frame," they said.

Panes Bulging In and Out

There would be times when the wind would blow long and steadily from the north-west. A stiff breeze from the *pitarak* centre; though no one would expect it to develop, it was so steady. And then suddenly the wind would rise from a gale to a hurricane, hard and sharp; and many would fail to get their shutters up in time. The result would be heavy damage.

This happened one winter.

Late in the night we woke up. The whole house was shaking under the impact of the howling, blustering hurricane. We had no shutters up. Our house, as I have said, was rather sheltered; and we deliberated whether to put them up or not. Perhaps it could not be done; probably not, the gale was too violent now.

Then a new sound mingled with the rumbling: a short, sharp clicking sound. Inspection showed that a hasp had worked loose on the shutters of the large living-room windows, where it was supposed to be half sheltered. It was swinging backwards and forwards on a chain, occasionally striking the window. The panes were bulging in and out, and we could imagine what the room would look like if the hasp broke the glass and let in the *pitarak.*

There was nothing else for it: I put on all the clothes I could get into, with a wind jacket and large mittens on top. My wife tied a muffler round my nose and mouth, and putting a hammer in my pocket I went out.

Not Eaten by the Bear

It is a fantastic experience to be out in a violent *pita·ak.* To stand still is impossible, and one staggers about like a man drunk: unless one decides from the start to move about on hands and feet. There is nothing to see but drifting snow, and it is painful to the eyes to try to take one's bearing. Breathing is difficult in the severe gusts of wind which tear and pull at one.

One moment, and I was blown round the corner. I landed on my knees in the big, hard snow-drift just below the window with the loose hasp: it could not have been better worked out. I knelt down as I hammered the hasp tight, while inside the room my wife stood with her nose pressed against the window-pane, trying to look out into the drifting snow: suppose I got eaten by a bear without her seeing it! It is the nature of women to exaggerate; and so I did not take the bear so seriously as she did. People who know say that in rough weather bears tend to find their way ashore from their haunts on the ice-floes. I cannot say. I was not eaten.

It was out of the question to close the shutters: they were too big. Safely inside the house again, I breathed a sigh of

relief. Then all at once there was a sharp crack. A window on the windward side had been blown in, to a spare room we used for stores. Where there should have been a sack of oatmeal there was now a snow-drift. The wind whistled round our ears.

A Mad Night

Once more unto the breach! I got the muffler round my nose and mouth and went out. At long last I had the shutters up. In my fury I was well warmed up before I had finished. I also got the shutters of the kitchen window up. That left only the four small basement windows on the windward side: and they should hold.

The warm blankets were calling. But first there was a bucketful of coal to put on the boiler; it was burning away fast. And while I was shovelling there was a clatter and a crash behind me: the first of the four windows had gone. There was no escape: I had to go out and battle with four more shutters. It was a mad night.

The next day, the settlement began to emerge from the snow-drifts and it was possible to get some idea of the destruction. Everything looked different. There had been deep, firm, rather hard snow everywhere; it had blown away and now lay in sheltered places in gigantic drifts. Nothing remained but the firmly trod paths, which crossed the landscape as narrow embankments of ice-hard snow a yard high. It looked absurd.

We had lost a small sledge which had been tied up under the steps. The rope was there still, but that was all. Later, we found a piece of matchwood down by the river. It was blue, and we thought we could identify it as a bit of the sledge. The rest we never saw again.

But this was nothing. The houses which had stood exposed to the wind had suffered heavily. Many windows were smashed, pumps were burst, aerials blown down. In one large house, where there had been nobody at home, several radiators were destroyed. In one place a chimney had blown down; in another the outside door had been torn off and blown goodness knows where. The roof had come down in a room of the meteorological station. Two lamp standards in the whole settlement could still be lit; the rest were smashed. A large oil barrel had blown down a slope and for many yards along the ground. All the windows of one house had gone, the oil stove had blown out, and the rooms were transformed into snowy landscapes.

W/T Man Came on All Fours

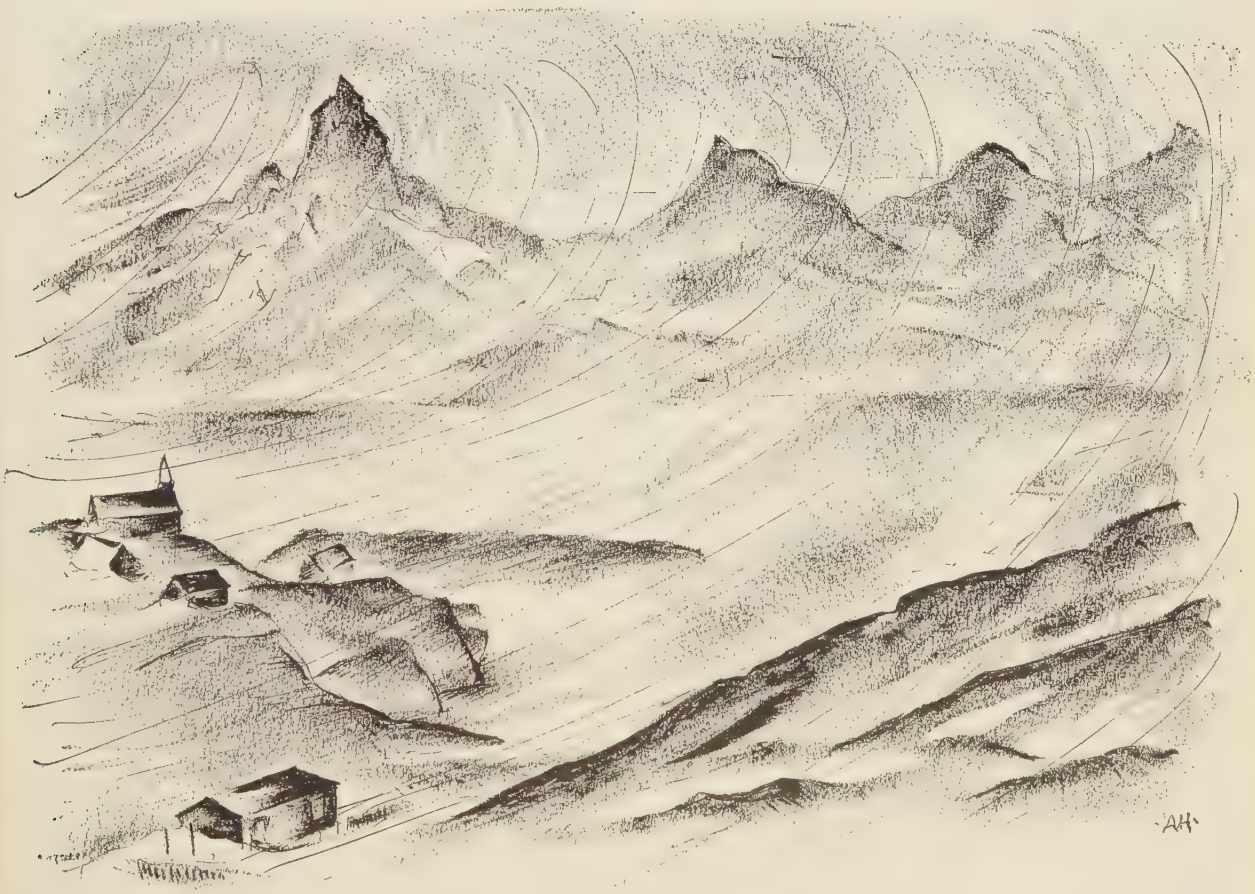
At the radio station, the night duty officer had sat at the typewriter in the frost wearing large mittens. There had been hardly anything but crackling from the receivers; several aerials were blown down, and work had been almost impossible. The relief, who came on duty at four in the morning, arrived on all fours.

Some people were unable to get out of their houses until the doors had been dug clear from the outside. These were the houses that had been sheltered and had received the drifts.

This had been a real *pitarak*.

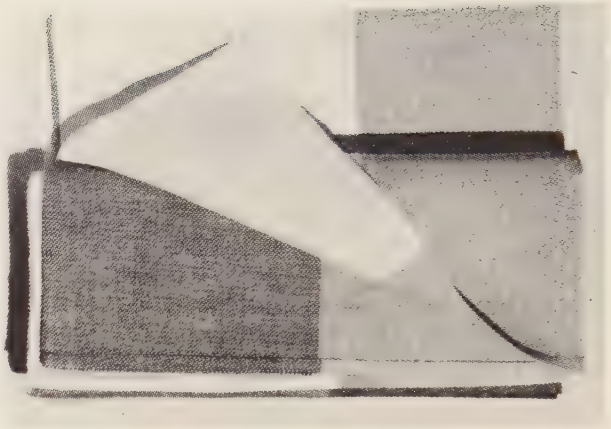
A few days later Makut, the carpenter's Greenlandic assistant, came round and made an inventory of the windows that had been broken. He was annoyed, as it was his job to put new ones in. He gave us all a piece of his mind.

"When *pitarak*," he said, with a stern look in his eye, "you shutters up!"



Angmagssalik – at 66°N. – is the "capital" of East Greenland, built on rocks overlooking the fjord. The staunch little wooden church stands up against the whirling Pitarak coming down from the inland ice

Partial microscopic cross-section of flax straw, showing two fibre threads



Much of the Danish flax is exported to warm countries in the form of linen cloth, but a good deal is woven in Denmark

From Flax Straw to Table Cloth

By P. Sonne Frederiksen

Director, Danish Flax Research Institute

The production of flax and linen goods in Denmark takes place mainly on cooperative lines and is efficiently organized, with close contact between primary producer and mill

Flax-growing formed the basis of a domestic production of linen goods in Danish farm homes down to the end of the last century. The advent of cotton goods, and the conversion of agriculture from cereal production to livestock farming three or four generations ago, put a stop to linen production; but the agricultural crisis of the 1930s and the war which followed revived interest in it and gave rise to a modern industry based on large-scale and highly mechanized cultivation.

The Danish linen industry owes its origin chiefly to the initiative of farmers and it is cooperative in character. Most of the seven mills are cooperative enterprises, administered by farmers chosen from among the suppliers. Thus the linen industry is organized on the same lines as the Danish dairy and bacon industries.

Favourable Conditions

Denmark is centrally situated in the flax-growing region of north-west Europe and both climate and soil are favourable to the plant's growth.

Flax needs rich soil and an abundance of rainfall, and so its cultivation is confined to the best agricultural districts. The principal other requirements are heavy applications of potash, moderate supplies of nitrogenous fertilizers, prompt sowing in friable soil, and efficient chemical weed control. Close contact between grower and mill has been of great importance; the Danish linen industry depends on a group of regular growers who, through years of experience, have learnt to produce a high-quality crop. Since the start of the industry 15-20 years ago, there has been a steady rise in the quality of the raw material and a steadily increasing appreciation of the processes which promote the formation of fibre in the plant.

Flax is the only Danish crop which is chiefly grown for the sake of its straw. In this straw are the valuable fibres; and every effort of cultivation and processing is designed to develop and extract them in the best possible condition.

From the earliest times, flax has been retted in order to make the straw brittle in preparation for the mechanical extraction of the fibre, known as scutching. Retting is a biological process, which takes place in one of two ways: by immersion in water (water retting), or by being spread on the ground (dew retting). Retting removes the pectic substances in the straw through decomposition by micro-organisms. Both methods are employed in Denmark, though in rather different forms from those generally used in other flax-producing countries.

Danish producers, although familiar with the traditional processes of manufacture, have to some extent pioneered new methods. Quickly realizing that the old methods were too costly, they set themselves the task of producing stronger and more uniform yarns at lower manufacturing costs. The bulk of Danish flax is scutched after moderate dew retting, carried out immediately after pulling. The pulling machine lays the crop in uniform layers on the ground and, after the plants have been tedded, retting takes place during rain.

By means of incomplete dew retting, the straw attains so much brittleness that it can be clean-scutched with a sturdy scutching machine. The fibre is cleared of shives, but unlike fully retted flax contains some chemical constituents and tissue, which have to be removed by chemical treatment. The biological, and somewhat uncontrollable, process is replaced by a chemical one whose effects can be more easily calculated.

Incomplete Dew Retting

The advantage of incomplete dew retting is its cheapness: it can be carried out concurrently with harvesting. What is more, the resultant fibre is extremely strong compared with fully retted flax, which is always impaired. Although the micro-organisms chiefly decompose the easily soluble substances, such as pectin and sugar, they also attack the cellulose fibres.

A small proportion of the Danish production is water retted. The means used in this case are highly mechanized warm-water plant, which reduces hand operations to a minimum, while being still based on natural drying of the retted straw. The retted flax is laid out to dry in fields, arranged in conical shocks. Fully exposed to the sun and wind in this way, the straw is aired and bleached; a very valuable process for the fibre.

The fibre content of Danish-grown flax is normally very large. It forms 15–17 per cent. of the harvest (straw and seed), and 25–30 per cent. of the retted straw. In processing, two-thirds of the amount of fibre becomes scutched flax (*i.e.*, long, orderly fibres), and one-third tow.

As a by-product of flax-growing, 700–800 kg of linseed is harvested annually per hectare.

Criticism and Control

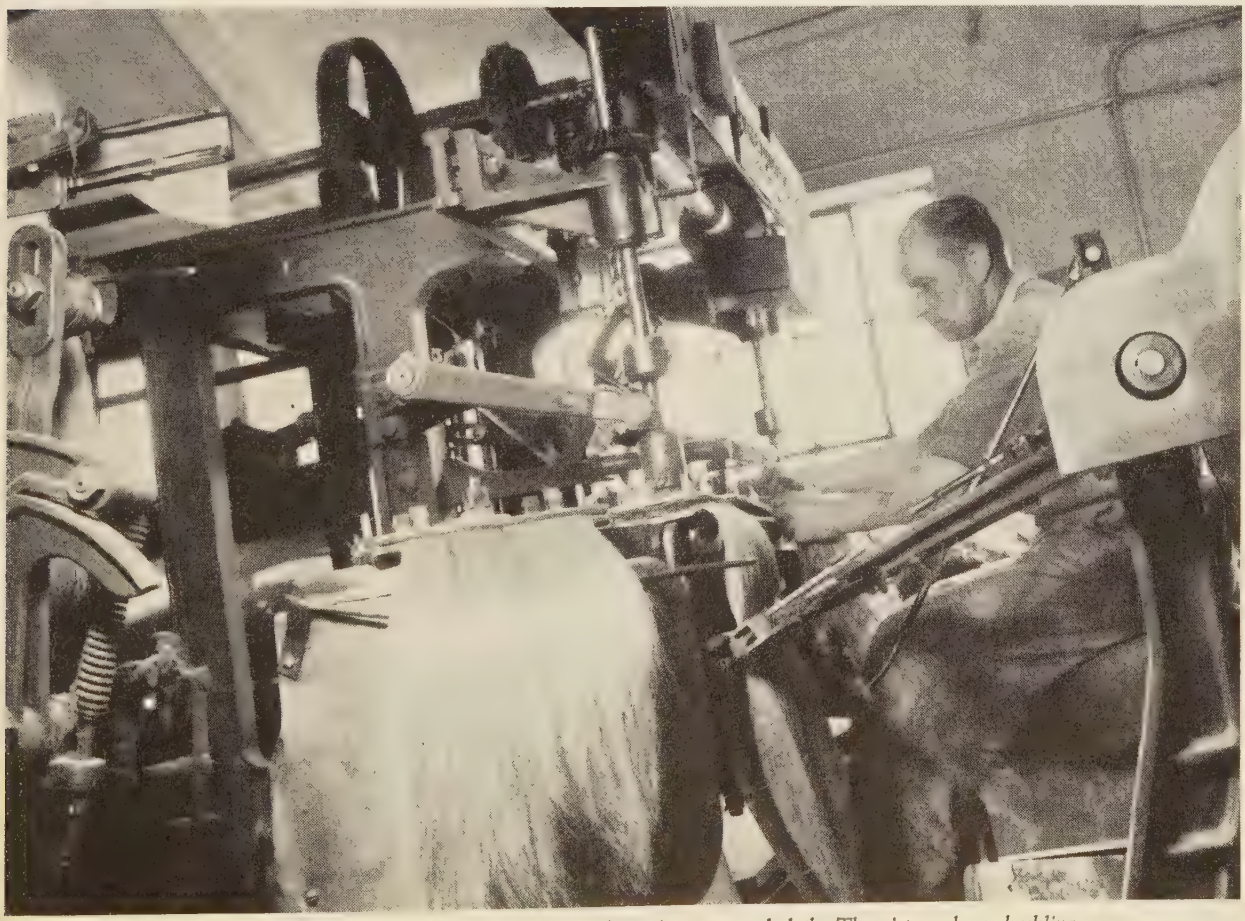
Danish linen goods are made almost exclusively from Danish-grown flax. The spinning mills were built, for the most part, at the end of the last war and just after, in connection with existing scutching mills. This arrangement, which is found in few places in the world, has proved to be rational and convenient. It provides valuable contact between spinner and primary producer. The management of the mill are able to make any criticism directly to the producer, who, for his part, can control the processing of the fibre and its potential applications. Probably, the structure of the Danish linen industry has been of material benefit to its rapid development and the training, at the same time, of flax-growers.

The bulk of Danish linen fibre is made into yarn in Denmark itself. The yarn is either exported or is used for making table-cloths, towel and tea-cloth linen, bed linen, tarpaulin cloth, furnishing fabrics, and such-like. Weaving takes place both at separate weaving mills and in the weaving departments of spinning mills. Where production embraces all the processing stages, from the growing of the flax by a farmer under the guidance of the factory's advisory officer, the linen industry is considered to have achieved the best form possible with the machines at present available. The concentration of every process of manufacture in one factory cuts out a good deal of transport of semi-manufactures, and so constitutes the most rational industrial form, provided that the establishment is of reasonable size.

A New Industry

The Danish linen industry has succeeded in establishing itself internationally in the course of a few years. Danish linen goods have reached a standard of quality which bears comparison with the products of traditional linen-producing countries. There is little reason to doubt that this development is essentially a result of the general organization of the linen industry, and of the contact existing in Denmark between farmers and their technical advisers, including, in this case, the research work carried on jointly by the linen factories.

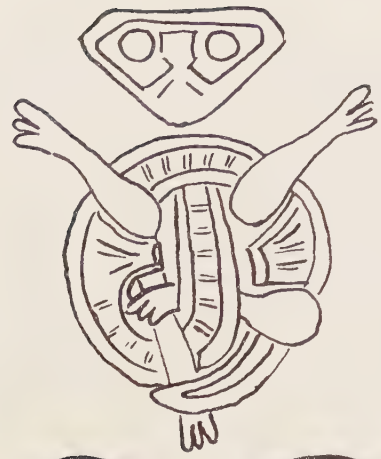
The linen industry is the only branch of the well-developed textile industry which can be termed 100-per-cent. Danish. It is therefore a trade with special social advantages and traditions.



The straw passes through a long process before becoming yarn and cloth. The picture shows hackling

The Viking Gripping Beast

By Thorkild Ramskou; drawings by Holger Philipsen
The National Museum, Copenhagen

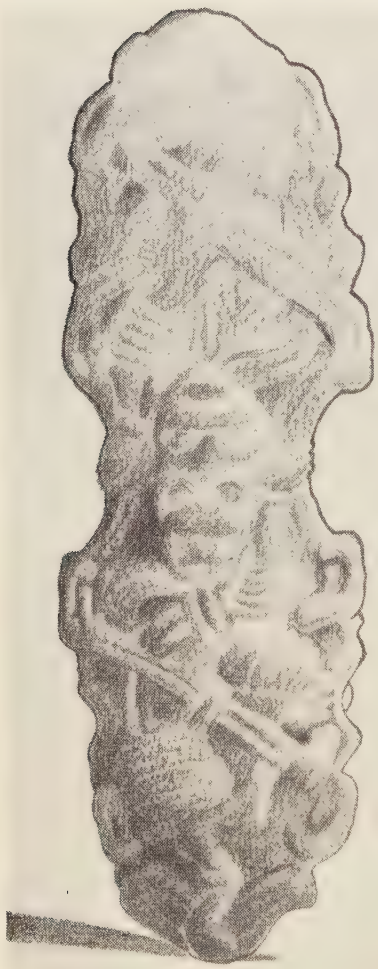


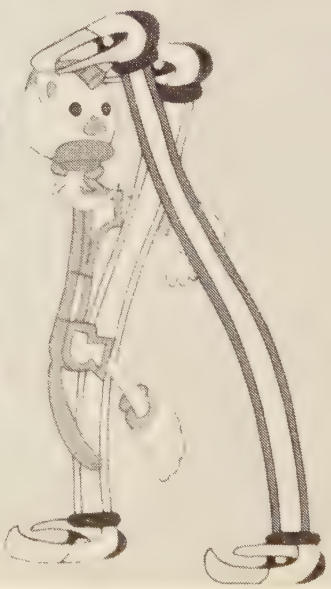
Above: Broach from Lisbjerg in Jutland. National Museum, Copenhagen

Upper, left: One of the gripping beasts from the Icelandic broach, shown middle left

Middle, left: Icelandic broach. National Museum, Copenhagen

Bottom, left: Still from the cartoon "The Gripping Beast". Broach from Hjallese. The components of the ornament have been brought alive: the two "hand beasts" hang the gripping beast in position and crawl in afterwards. (Drawing by Holger Philipsen)



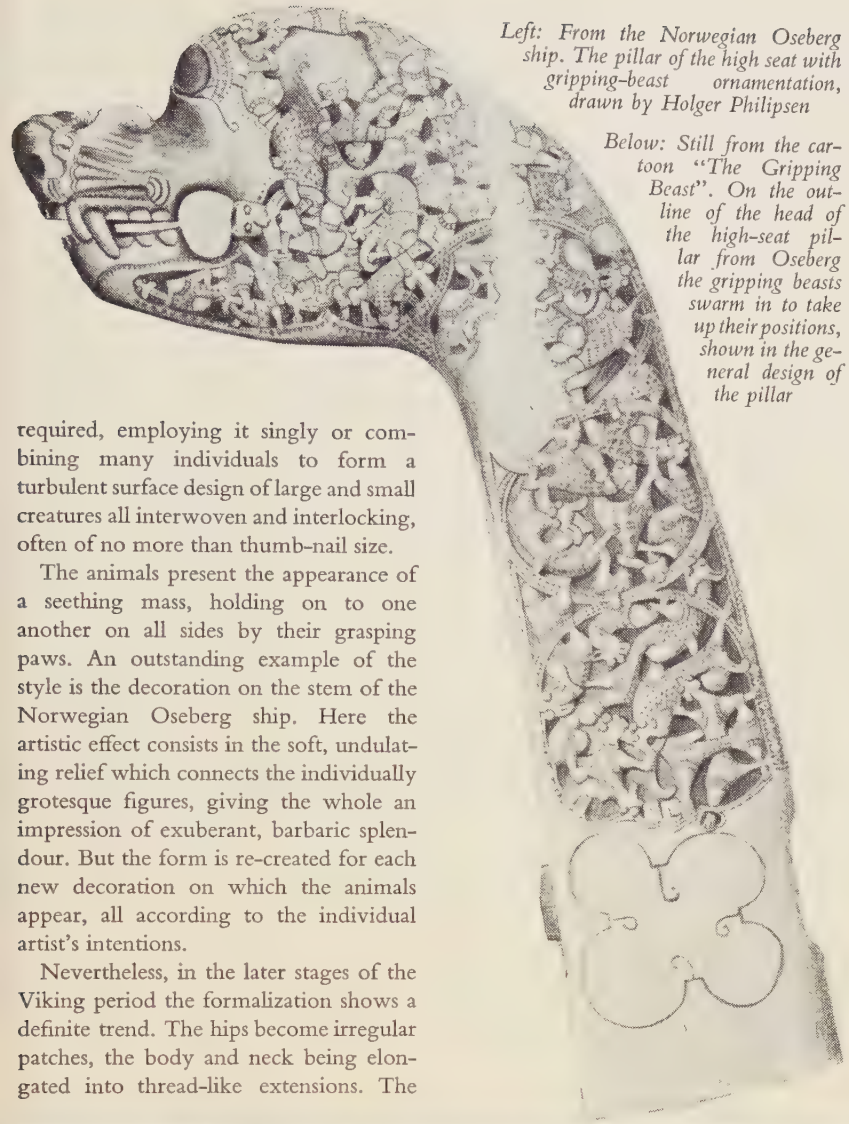


The Viking ornamentation which we have called the gripping-beast style merits attention by reason of its artistic quality and the technical perfection evident in its application. The complicated designs of this style have been popularized in a Danish animated cartoon which was produced for the 150th anniversary celebrations of the National Museum by Thorkild Ramskou, archaeologist, and Holger Philipsen, cartoonist

With the rise of the Viking period (about 800 A.D.) the Scandinavians were brought into closer contact with other peoples of Western Europe than they had ever been. The Viking ships fanned out in all directions; and with wondering eyes and receptive minds their crews assimilated a culture previously foreign to them. More than warriors and adventurers they were also shrewd traders, and they had a well-developed aesthetic sense. From so much that was new to them they drew inspiration which has been of considerable importance to the whole history of Scandinavian art.

The naturalistic figures of lions which the Vikings encountered, especially in France, both in church decorations and in the manuscripts of the style period called the Carolingian renaissance, made a particular impression on them. They provided the basis for a new style of art. From an imaginative conception of the powerful and noble nature of this animal the Vikings created a wholly original figure, highly formalized from the outset. We have called this style the gripping-beast style, because the small figure which is its central theme has the characteristic habit of seizing hold of itself or its surroundings. Only the earliest specimens bear any resemblance to the prototype. Soon the creatures acquired a fantastic appearance in plastic relief. Often the animal has a long nape. The body is slender but thickened out at the hips, the creature as a whole distorted in violent motion.

For the next 200 years—the full duration of the Viking period—this art developed along its own lines. The Scandinavian artists remodelled the animal as



Left: From the Norwegian Oseberg ship. The pillar of the high seat with gripping-beast ornamentation, drawn by Holger Philipsen

Below: Still from the cartoon "The Gripping Beast". On the outline of the head of the high-seat pillar from Oseberg the gripping beasts swarm in to take up their positions, shown in the general design of the pillar

required, employing it singly or combining many individuals to form a turbulent surface design of large and small creatures all interwoven and interlocking, often of no more than thumb-nail size.

The animals present the appearance of a seething mass, holding on to one another on all sides by their grasping paws. An outstanding example of the style is the decoration on the stem of the Norwegian Oseberg ship. Here the artistic effect consists in the soft, undulating relief which connects the individually grotesque figures, giving the whole an impression of exuberant, barbaric splendour. But the form is re-created for each new decoration on which the animals appear, all according to the individual artist's intentions.

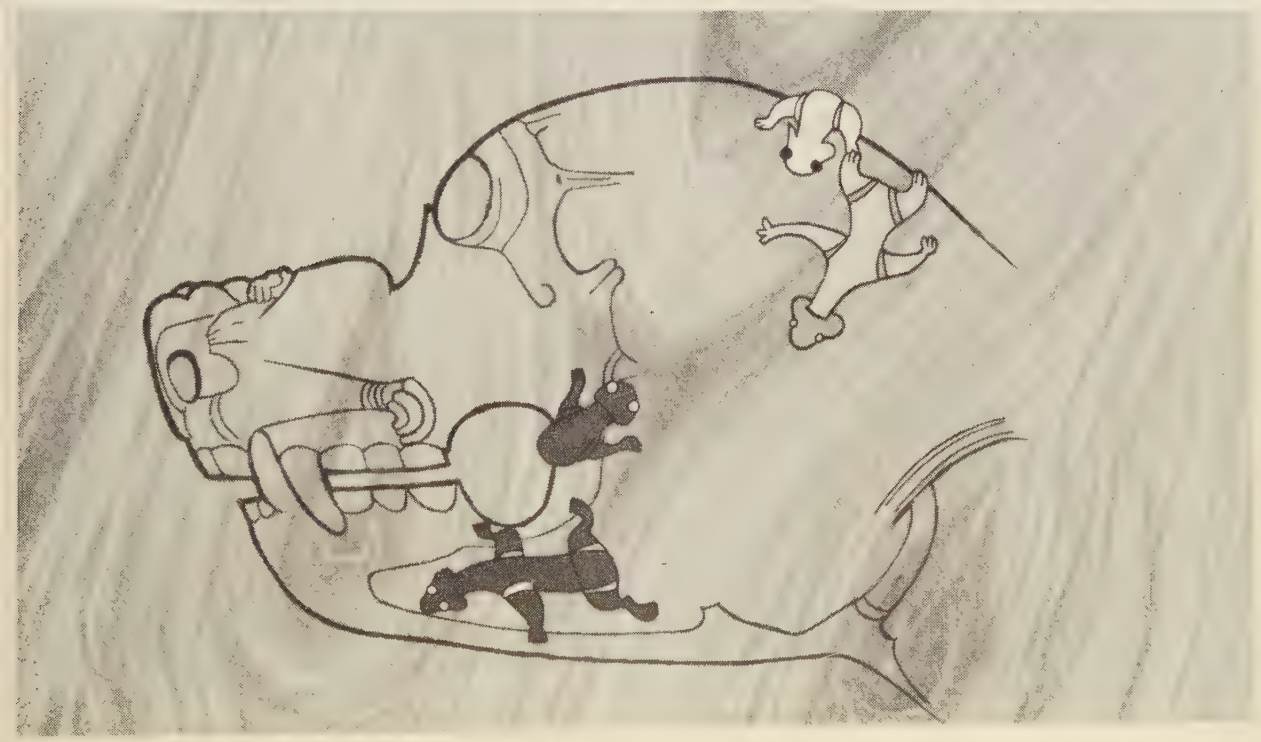
Nevertheless, in the later stages of the Viking period the formalization shows a definite trend. The hips become irregular patches, the body and neck being elongated into thread-like extensions. The body is curved into a semi-circular arch broken by the neck, the head shown full face.

The gripping-beast style is the most original artistic creation of the Viking period, common to the whole of Scandinavia, and it preserved its freshness all through the Viking period. Only when Christianity was introduced about A.D. 1000 did it go out. With the new faith came also a new art, and the old fantastic beast of paganism had no place in it. It vanished as abruptly as it had appeared.

The decoration has chiefly come down to us in miniature form on ornaments, swords hilts, and such-like. For this reason it is almost unknown except to specialists. Yet it merits the closest attention because of its artistic qualities and the technical perfection that went into the best specimens. Better craftsmanship has never been seen anywhere.

With the idea of rescuing this admirable art from its obscurity we have put it into an animated cartoon, a technique which has enabled us to clarify the most complicated designs. The film was produced with the support of the Danish Ministry of Education.

The film traces the history of the style. The animated creatures are shown wriggling into various decorations and disentangling themselves. Only elements of the gripping-beast style are used throughout. The result is a new link in the chain of the endeavours to popularize archaeology which are among the outstanding traditions of the Danish National Museum.



Royal Humility

Celebrating the fortieth anniversary of his class at a ceremony at Copenhagen University, King Frederik IX spoke from the floor below the rostrum, saying that he did not feel worthy to ascend it.

The King was the sole member of his form at Amalienborg Palace school, the only other boy being his brother, Prince Knud. Five days after passing his examination the Crown Prince (as he then was) entered the Navy as a cadet.

Our cover

presents a few of the many blueprints for the construction of the mushroom-like Sydney Opera House, worked out by the Danish architect Jørn Utzon. His design won among 932 projects. The drawings represent: front cover, the main section, north-south cut; back cover, the main section, seen from above – and a perspective from the main entrance.

Denmark abroad

Denmark has obtained her own house in Edinburgh, the future headquarters of the Danish Society in the United Kingdom. The building comprises reception and lecture rooms, office, and a flat for the Society's representative.

The actress Manja Mourier has just concluded a tour of the United States, where she gave readings from Danish authors, showed films about Hans Christian Andersen and Greenland, and sang Danish songs, under the auspices of the Ministry of Foreign Affairs.

Straight from the Source

Thirty-five children at Nof Jam school in Israel, learning about polar bears and igloos in Greenland, had the idea of writing to the school at Godthaab, the Greenland capital. The children there, wishing to tell their correspondents at Nof Jam what Greenland is really like, sent letters, pictures, and drawings, making a whole bookful.

Not only is there now regular correspondence between the two schools but, says the Ritzau news agency, many children from other Israeli schools have visited Nof Jam to learn about Greenland.

Frogman finds Viking Ships

In Roskilde Fjord off Frederikssund (where an annual Viking festival is held) sensational finds of Viking ships, over 65 feet long, have been made. The wreck of one of these had been known for many years, but it was only when a member of the staff of the National Museum in Copenhagen was trained as a frogman that it proved possible to clear it of mud, measure, and photograph it. During the work another wreck, of the same length but better preserved, was found.

The museum hopes to use frogmen for exploring other wrecks in Danish waters.

A Fair Wind for Yachts

From a moderate start of 125,000 kr. in 1953, the value of Danish yachts exported to the United States rose last year to 3,300,000 kr. There are good reasons for the trend. The various types built by Danish boatyards were tried out in home waters before being despatched for demonstration cruises off American coastal towns (see the article in DFOJ, No. 24).

A Century of Music

For four generations the Copenhagen music publishers, Wilhelm Hansen, have carried on a publishing business which has few equals in small countries. The house has been a factor in the musical life of Denmark for the last 100 years, supported by an unusually faithful staff, a few of whom have been in the firm's service for 60 and 65 years.

In recent years the gramophone and the radio have carried music to ever widening circles. Relations between the firm and its customers nowadays are rather different from what they were in the early years after 1857, when all music-lovers used to gather in the basement shop on Kongens Nytorv.

Carl Nielsen was among the firm's composers.

The Copenhagen Boys' Choir was suggested by the present heads of the business.

On Safari in Greenland

Tourists of the Safari class, bored at the thought of having seen all there is to see, may now have a chance of going to Greenland. A Danish syndicate has plans to link up with SAS polar air services and station a passenger ship as a tourist hotel in Disko Bay, at 70° N. lat. Starting from Søndre Strømfjord, which is open to shipping from mid-June to November, visitors would see Greenland in all its splendour, go fishing, and make expeditions to the ice-cap.

Smiling statesmen. During his visit to Denmark last summer Mr. Nehru, Prime Minister of India, was shown the famous Tivoli gardens by the Danish Prime Minister, Mr. H. C. Hansen

In the autumn a Freedom Museum was opened to commemorate Danish resistance to the German occupation. "The Savage Canary" by the American journalist David Lampe comes almost as an illustration to it. The picture shows reception of arms by parachute

BOOK SHELF

The Pattern of Resistance

David Lampe: The Savage Canary. *The Story of Resistance in Denmark. With a foreword by Air Chief Marshal Sir Basil Embry, G.C.B., K.B.E., D.S.O. With index, map, and 24 pages of illustrations. Cassell, London, 236 pp. 18s.*

In the light of her position after the Nazi occupation on April 9, 1940, Mr. Winston Churchill said that Denmark was destined to be "the sadistic murderer's canary". The metaphor is developed by the American journalist David Lampe, junr., in this book, which is based on a series of studies of the Resistance Movement in Denmark and numerous interviews with Resistance leaders. The result is a stirring story setting out the *purpose* of Resistance, its organization, and its justification. In 22 chapters—or "features" —the author describes characteristic and momentous events in those "five long years" when the Resistance Movement, through its in time highly effective organization, proved a vital qualification for the achievement of Allied status by Denmark in the latter part of the war.

Among the exploits which David Lampe relates are the organization of the underground Press, reception of arms by parachute, industrial and railway sabotage, the organized escape of 7,200 Jews to Sweden, "Operation Bohr", the general strike, the rescue of hostages from the Gestapo headquarters, and the gathering and transmission of the first intelligence about the V1 flying bomb, from Bornholm.

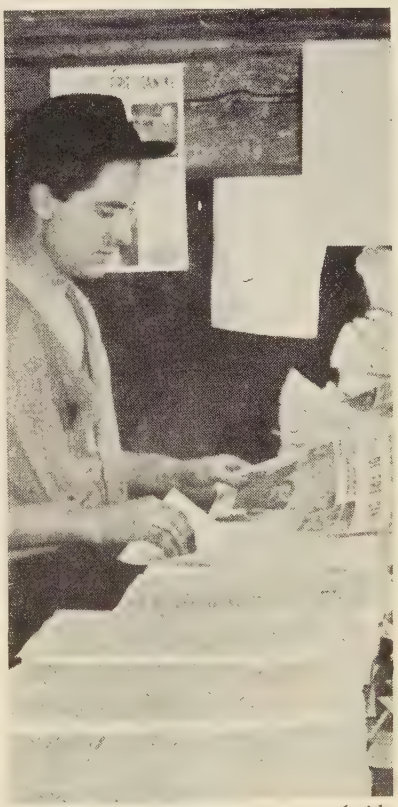
The story of "Operation Bohr", of how the Danish nuclear physicist Professor Niels Bohr was smuggled out, is worth recounting. When he reached Sweden after a dramatic escape he refused to go further until he had seen the Crown Prince (now King of Sweden) and obtained from the Swedish Government a public protest against the German persecution of Danish Jews. This achieved the professor was ready to fly to Britain in a Mosquito bomber. When they had climbed to a high altitude the pilot, speaking through the microphone, asked Professor Bohr to put on his oxygen mask. There was no response, and to the pilot's horror he found that the great scientist lay unconscious in the bomb rack. Fearfully, he continued the flight across the North Sea. On landing in Scotland, however, he was relieved to find that the professor, quietly and undisturbed, *had slept*. Professor Bohr, whose absent-mindedness is a by-word, had simply not heard, having forgotten to put on his headphones!

In the United States Professor Bohr worked on the atomic project in the deepest anonymity. Walking one day in New York he met a female acquaintance from Copenhagen, who exclaimed delighted: "Why, hullo, Professor Bohr; I'd no idea you were in America!" "I'm sorry," replied the professor, "you are mistaken. My name is not Bohr." "Why, of course it is; I knew you well in Copenhagen." "Sorry, madam, I am *not* Niels Bohr," he said, and then cheerfully, in innocent absent-mindedness, went on: "But how are *you*, Mrs. Hansen?..."

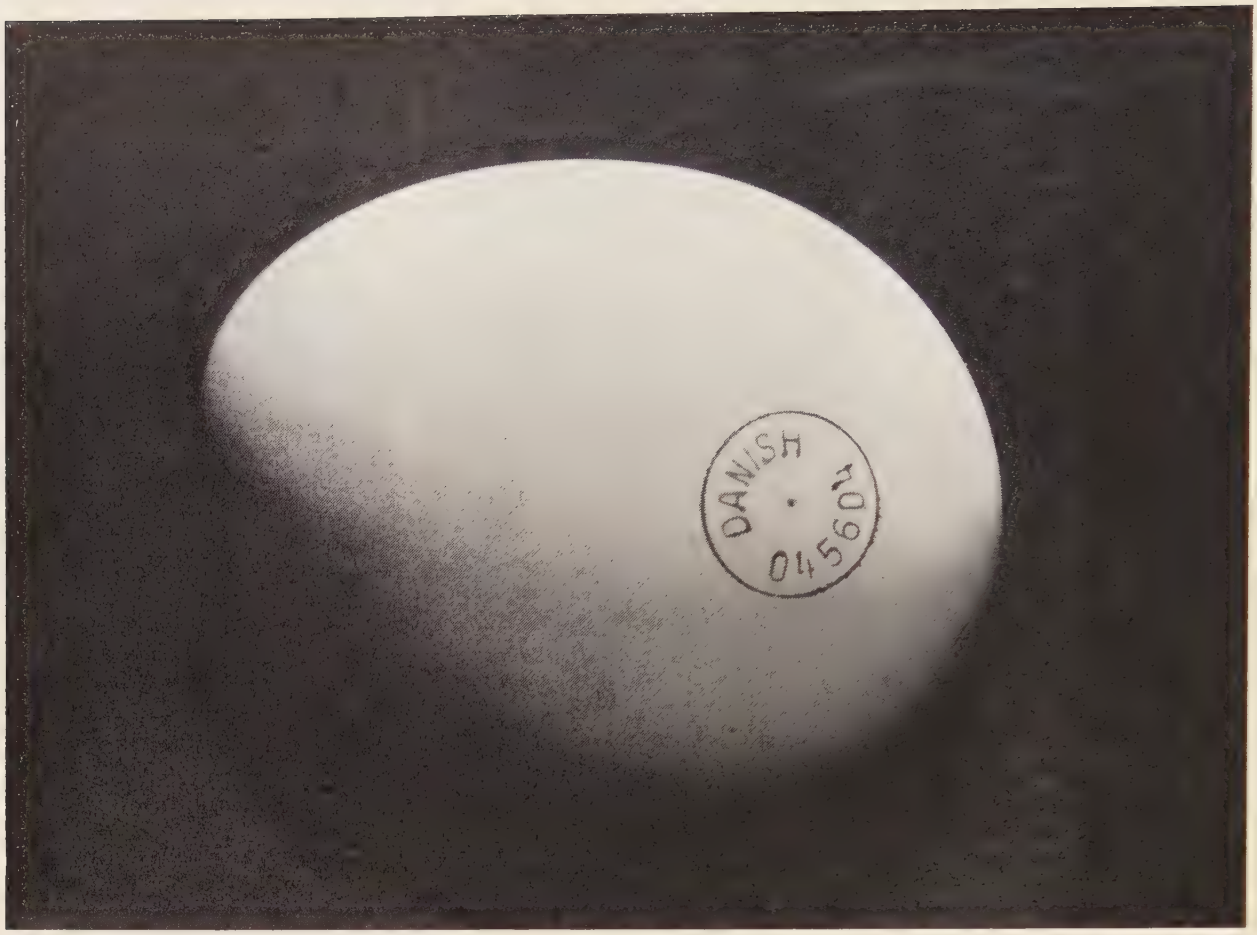
The feature of "The Island" (Bornholm) may also be singled out. Lieutenant-Commander Hassager Christiansen was in charge of the Danish Bornholm Marine District in this Baltic island. In 1943 he heard of some radio-controlled flying bombs that were being tested in Germany. Fishermen had told him of these queer aircraft which often crashed into the sea to the south of the island. One warm summer's day, August 22, 1943, one of them landed on the island itself. Notified by the chief of police at Rønne, Hassager Christiansen succeeded in getting to the spot with him in time to photograph the strange object before the Germans arrived. A report with photographs was duly sent to London via Sweden. The queer little aeroplane was marked V1-83. It was the first full intelligence received by London about the V1 bomb. Lieutenant-Commander Hassager Christiansen's report was rewarded afterwards with the Distinguished Service Cross.

The ground covered by this book is extremely comprehensive, though it makes no claim to be a documentary account.

The Savage Canary has been published simultaneously in a Danish edition, with a foreword by Ebbe Munck, C.B.E., who was the representative of the Freedom Council in Sweden. *Bengt Petersen*



During the war the Danish Press adroitly avoided compromising itself; nevertheless, naturally and inevitably there arose an underground press, which is still referred to as the "illegal". The picture shows "De frie Danske" in course of production



Neither a sputnik nor a baby moon, but a 100-per-cent fresh and top-grade egg. The word "Danish" is your guarantee. The revolutionary stamp indicates, in code: letter and first figure (04) the exporter; next two figures (56) the week when quality grading was carried out; and the last two figures (04) the packing station where the egg was graded

The Egg and You

By Knud Ravnkilde

Measures governing Danish food exports have again been intensified: a completely new method of stamping eggs has been made compulsory in a new quality drive which guarantees the consumer against low-grade eggs and assists the industry in its competition with subsidized producers in other countries

The choicer the Danish egg has become through generations of breeding and research, the more particular has been the care taken over its lot. To the young egg of today this must seem rather illogical. Here we have a nation's farmers uniting to produce the wholesome and delicious egg of 1957 model—only to welcome its appearance with a further tightening-up of control measures. Granted that it must please an aristocratic product, having no greater desire than to go abroad, to be handled gently and receive so much attention on its long journey. But at the same time the journey is made ever faster, the lifetime of the egg both shorter and less peaceful.

The 1957 egg must take comfort in the thought that it belongs to a pioneer class. If an egg could throw out its chest, that is what this one would do. For it bears a new code stamp, which marks a great advance on previous grading measures, and which like most other Danish ideas of this kind is sure to be copied by other countries.

Experience shows that every new step to improve the quality of food is quickly matched by others in the keen competition for world markets. So it will be a strange thing if in the foreseeable future European housewives do not tell imported eggs by this stamp. So far, Danish eggs are the only ones to have it.

The chief purpose of the stamp is to prevent consignments from being kept back by expectations of a rise in the price. One of the greatest risks to an egg's quality is a delay of this kind. At the same time the stamp enables a bad egg to be traced back through every stage of its distribution, so that it can be seen where it came from, where it was held up, and who was responsible for the poor quality. The consequences to the culprit may be extremely unpleasant.

The stamp—which must be put on not later than 48 hours after the egg's arrival at the packing station—is a code consisting of a letter and five figures. Theletter and first figure denote the exporter, the next two figures the week in which quality grading took place,and the last two figures the packing station where the grading was done.

The effects of the stamp go beyond the point where the Danish egg is sold to a foreign importer, as the foreign retailer can also find out whether it was held up after delivery to the importer.

It goes without saying that the new stamping system met with strong resistance from various sides. But it is already plain, only a few months after its adoption, that stamping has considerably more supporters than critics, in every stage of the trade. Dealers say that it has given excellent support in foreign competition, and has boosted confidence in (and sales of) Danish eggs.

Reasons for the Measure

Of course, one of the reasons for introducing stamping is the fact that it is becoming increasingly difficult to compete with other food-exporting countries, whose farmers—in contrast to the Danish farmers—are Government-subsidized. An equally important reason is the knowledge that consumers everywhere attach great importance to getting food that is wholesome. It was fortunate that Danish egg production was well equipped in this respect when big subsidies to domestic egg production forced foreign-produced eggs out of the British market. The place as the leading importer of Danish eggs was taken by Germany, which in 1956 bought 57,883 tons out of a total export volume of 98,675 tons. Eggs are Denmark's largest export commodity after butter and bacon; and though Danish egg exports are now exceeded by Dutch, the item is of greater importance to the Danish than to any other economy, owing to the smallness of the country.

A more important reason than any other for this lead in the efforts to intensify quality requirements, however, is perhaps to be found in the special tradition and structure of Danish agriculture. The transition to the production of lifestock goods at the end of the last century was brought about by a crisis in cereal production which convinced Danish farmers of the advantages, and the need, of the closest possible cooperation. For this reason the Cooperative movement grew stronger here than in any other country, and Denmark was able to pioneer in one quality drive after another. It is not enough that some of the food produced is of high quality if you want to sell in large quantities. The whole production must be of *uniformly high* quality—and that can only be achieved by cooperation.

Ideals and Commercial Aims

Naturally, the Danes pride themselves on enhancing their reputation for exporting the best food in the world. This is not to say that Danish farmers necessarily have a loftier code of honour or more idealism than others. The new stamping system, like earlier measures of a similar kind, is based on an even more solid foundation, the purely commercial one. A producer submits to severe self-discipline because he knows that in the long run only uniform quality can ensure large-scale marketing at reasonable prices.

It is characteristic that the start of measures to enforce quality is always voluntary. Only when they have justified themselves, and progress has gone so far that the last laggards have to be brought into line for the general good, is the Government asked to make the measures compulsory. And while the 205,000 Danish farmers, out-and-out individualists as they are at heart, want as little to do with the Government as possible, they like it to be responsible for all quality controls, in order that they may be neutral and official.

The new "basic law" of the egg trade, which came into force on January 1, 1957, not only makes date-stamping compulsory, it introduces other important measures to protect the egg on its way from farm to breakfast table. Of course it reaffirms the basic provisions which already existed, such as that no second-grade eggs may be exported. These include eggs which have been washed or otherwise cleaned, since it has been established that washing may affect the quality. A new provision is the one that a producer may not sell eggs for onward marketing unless he delivers them at least once a week in specially constructed boxes, together with a form giving the producer's number, date of delivery, etc. The form accompanies the eggs until quality-grading has taken place at the packing station. No payment is made to the producer until after grading, and deductions for any second-grade eggs are made at once.

The law has thus tightened up the requirements on both producer and the trade, and it introduces measures so comprehensive that we may call it a revolution in egg marketing. This revolution will no doubt spread to the world egg market as a whole, bringing us nearer to the day when a low-grade egg never reaches the shopping basket. Until that day dawns the latest drive will have taken the Danish exporter a few paces ahead of his competitors.

Every egg is "candled" at the packing station. The process reveals practically every internal defect; such as heat injury, foreign bodies, blood, blotches, marbled and discoloured yolk, etc.

School for Unskilled Workers

Recently, the Ministry of Labour opened its fifth school for training unskilled workers in the building, motor and engineering, and pipe-laying trades. The schools, which run three-week courses, are residential, and have combined accommodation for 224. Since the founding of the first school in 1951 they have been attended by 7,000 workers. Two-thirds of the costs are paid out of the Unemployment Fund, the remainder from civil estimates.

☆

Say Cheese

An attractive jubilee booklet with this title has been published in English by a Danish cheese-exporting firm with world-wide connections. The publication is illustrated with a number of vignettes. We quote the following from the text (by Mogens Lind):

"Confronted with Rock'n Roll, Beethoven addicts are apt to pale. Similarly, elderly cheese eaters can be taken aback by other people's opinions—for instance, that a dab of strawberry jam on top of Danish Blue is an absolute necessity, or a little Gorgonzola in half a grapefruit is a good idea, or that salads should be reinforced with diced cheese or creamed cheese. But oddly enough, if they dare to try, they discover it tastes good.

"For cheese has a curious secret: it goes with nearly everything and everything goes with it. Perhaps, to be perfectly honest, one should draw the line at stewed fruit, cream cakes, and chocolate mousse. But otherwise cheese is splendid with bread and butter, with meat and fish, vegetables, rice, macaroni, and soup. You can practically always smuggle cheese of some kind in somewhere."

Airborne pedigree cats in the gentle hands of SAS

They Stop Short at Giraffes

By Erik Frandsen

Fish would seem to be the only creatures which cannot tolerate air travel. The carriage of other live animals is an important factor in the recent striking expansion in air transport

A Copenhagen aquarist recently ordered some tropical fish, and asked his overseas supplier to send them by air. This, however, he should never have done, as the poor fish suffered severely on the journey; whether from air-sickness or sea-sickness is open to question, for they swam about in the air in their tanks.

In contrast, a bull weighing 700 kilograms evidently enjoyed its flight from New York to Rome. On arrival it was found to weigh 706 kilograms. It had eaten with tremendous appetite nearly all the way.

Following the Goldcrest

Fish, it would seem, are the only creatures which do not enjoy flying. The Scandinavian Airlines System (SAS) have often carried small menageries. In one case they flew a consignment of birds over the Alps to Copenhagen in a modern airliner. They could never have got so high up by themselves, but if, like the goldcrest in the fable, they had been able to think and speak, would no doubt have boasted of flying several miles high. There was a case of bird transport that was both amusing and touching when German bird-lovers gathered up exhausted swallows delayed in their southward migration and had them taken by SAS in boxes to Cairo.

Inside a cargo plane: mail bags still occupy much of the space

SAS posters at one time carried the text "Anything but Giraffes". Not surprisingly, therefore, both publicity and freight departments were shaken when the firm was asked to deliver a giraffe. The freight department applied itself to the job, while publicity looked nervously on. Success would spell the doom of a good slogan. The end brought a sigh of relief from the publicity department. The giraffe could not get into the machine, unless it stuck its legs out behind, and its neck right in to the pilot. And that would have been a shame—for the pilot and the giraffe.

Saving Lives and Money

SAS freight planes have carried more than a mixed collection of animals over the years. Cargoes have been very mixed in every way.

A ship may be laid up in a distant port, waiting for an important spare part for the engine. For the vessel to remain idle while it is obtained by slow transport would incur heavy loss, and so the part is sent by air.

There is an outbreak of polio in, say, Argentina, and an urgent appeal goes out for respirators. These are available in Copenhagen, and are despatched immediately by air. Had they gone by surface route, the delay would have meant loss of life.

A complete list of the commodities consigned by air to customers all over the world in SAS aircraft would run into yards. A random list might include clocks and watches, beer, instruments and electrical equipment, racing bicycles and motor-bicycles, pharmaceutical and surgical goods, serums and vaccines, etc.

Minks for Film Stars

In the flower-less Scandinavian winter, flowers are flown to Denmark from Italy and the Riviera; in summer, delicious fresh strawberries are sent from Denmark to places such as Rome and Bangkok. Danish mink furs are flown over the Pole to Los Angeles for film stars to snuggle in. They will very likely turn up in Denmark again when the same stars visit Europe, usually also by air.

Precious loads of silver too, go regularly to the United States, while delicacies like lobsters are flown to gastronomes in France.

The volume of freight carried by SAS in recent years has shown a striking increase. The figures speak for themselves. In 1951, the amount was 13,000,000 ton-kilometres, in 1952 13,600,000, in 1953 14,400,000, in 1954 15,200,000, in 1955 19,300,000, and in 1956 20,600,000. Thus, last year the increase was about 7 per cent. There is every indication that the rise will continue.

Freight Rates Experimental

As for freight rates, they are still in the experimental stage. But it may not be many years before they are given more definite form. The tremendous increase in air traffic will make this necessary.

Staple goods will still go by sea; and in general, ships will continue to serve a useful purpose during our lifetime! But whenever the time of delivery is important, this factor will be taken into consideration—with, of course, the weight and value of the goods—in deciding whether to meet the extra cost of delivery by air. The chance of air transport *vis-à-vis* surface transport rises with the degree of manufacture. Even now, there is a good deal across the North Atlantic, where air freight up to now has had its greatest success.

And who knows? The time may come when the SAS slogan is "Anything—including giraffes".

Loading Danish fur-bearing animals at Kastrup, Copenhagen airport

It's the Teeth that matter!

By K. Henning Pedersen

Saw blades of a type made and invented by a small Danish firm have cut their way into every continent

The position of the teeth - and the method of manufature - gave the idea for a production which has put Danish saws on the map in every continent. An examination of the blade of these saws reveals two closely set rows of teeth. This is the idea. The method is to machine the steel, set the teeth correctly in relation to each other, and grind them to cut any kind of wood.

The originator of the idea was Mr. Hans Schroeder, a Copenhagen importer of tools with a *penchant* for saws. With the help of skilful technicians he not only designed this one, but devised a semi-automatic method of production. The result is a uniform article, competitive in quality and in price.

Production rose steadily, and soon the original back-yard workshop proved too small. Now the business occupies an up-to-date factory in the country. In five years the annual output has risen five-fold to about 400,000. In one day orders have come in from South Africa, Rhodesia, Brazil, Australia, New York, London, and Paris.

Even things as down to earth as saws have had to follow current trends of fashion as well as quality. A saw must appeal to the eye like anything else. And so the steel frame is painted a bright red, yellow, or green—colours which will not chip off because immediately after painting the frames are dried rapidly by infra-red rays. The latest idea is packing in plastic bags. A saw so gaily coloured and neatly packed might at the dealer's resemble an article for the bath-room rather than one intended for hard use in the open.

Quality is under constant control. The steel is tested for hardness by the international Rockwell system before use. The blades are processed in batches of a gross, a few being taken from each gross and submitted to thorough-going tests. They are made to saw through fresh and seasoned wood of various degrees of hardness, the sawn wood being examined to ensure that the blade has cut clean. One of the toughest of woods is the Danish national tree, the beech. A saw which can deal with a beech-tree can cope with any wood. At regular intervals the operative measures the position of the teeth to make sure that they are of equal height along the whole blade.

The positioning of the teeth is the main feature in this new pattern of saw, which has vindicated the hopes that were placed in it. The sore point is filing it, but the blade can be changed. Considering that it takes an hour or two to sharpen a saw by filing, it is economical to buy a new blade.

These saws are intended not only for woodcutters. They are also meant for the handyman who believes in the motto "Do it yourself".

Electrical and Atomic News

An exhibition held recently in Copenhagen illustrated the record development of Danish electrical industries. Output, which has trebled in 10 years, is expected to exceed 1,000 mill. kr. this year. Important items are cables and electric motors, but the most rapid expansion is in telecommunications, owing to the spread of television.

The introduction of nuclear energy will provide fresh scope for the electrical industries. The Danish atomic power station at Risø has just held its first reactor course.

Faroese Coal for Denmark

The coal mines of Suderø in the Faroe Islands hope, after modernization, to ship regular supplies of coal to metropolitan Denmark.

The clay surrounding the coal seams is sent to the pottery island of Bornholm.

Potatoes in Demand

This season's Danish potatoes are in good demand, owing to their high quality and to a poor harvest in many other countries. Exports account for 10 per cent. of the production, and comprise both ware and seed potatoes. The principal markets are in Europe and South America.

Originals and Imitations

It is not unusual for American newspapers to carry full-page advertisements of Danish furniture and, according to Danish travel associations, the autumn arts and crafts exhibitions in Copenhagen are a great attraction: young couples come here to buy *en bloc* for their new homes, from curtains and carpets to furniture and applied art.

The National Association of Danish Arts and Crafts celebrated its fiftieth anniversary earlier this year. The fifth Scandinavian Applied Arts Congress, meeting in Copenhagen for the occasion, voiced strong protests against the flood of imitations and appealed for legislative action against this form of unfair competition.

Perculator, teak and silver, drawn by the sculpturer Jens Andreasen for A. Dragsted

A Peculiar Cocktail – and other drinking habits

By Poul Trier Pedersen

A pint of spirits a day has become a "thimbleful" on festive occasions – though foreigners should beware of the innocent-looking "snaps"! Its producers, incidentally, have entered the lists against the British by exporting whisky and gin. Denmark—where every glass of beer is a contribution to art and science—exports a variety of other beverages, as well as raw materials and machinery for their production

Drawing by Lars Bo

The author is not alone in bowing to Gambrinus, the legendary Flemish king who is said to have first thought of brewing: people all over the world pay homage to him daily when they drink his Danish successor's product

Elderly Danes can still recall the good old days when a self-respecting workman would take a pint of spirits to work with him. Food was plain: coarse bread, a herring, and a sausage; but a "nip" was usual. To many, a pint was the day's ration; and it was a man's drink, for the spirits were 40-per-cent. pure alcohol. Not to be sneezed at; and good for girding a man for hard work, excellent for putting life into stiff limbs in the cold winter season.

For a time "the poor man's drink" was an issue in the Danish Parliament; but the tax collectors won. From an everyday beverage, "akvavit" slowly but surely became a celebration drink—the *national* celebration drink without rival.

How innocent it looks, standing on a well-spread cold-lunch table, served in slender glasses dewy from the chilled, limpid liquid. A thimbleful, old people will contemptuously remark, referring to the size of the glass. At a pinch they can accustom themselves to the stiff prices nowadays; but the size of a "snaps" measure...!

Revealing its true character

"A drop for the ladies," we say in Denmark; but they only sip, having learnt to be on their guard against the innocuous-looking liquid which is so deceptive. Foreigners should go carefully for the first half-hour of lunch. It is then that the potent "akvavit" reveals its true character.

Still current in western Denmark is the term "coffee punch", used to describe a peculiar cocktail made from a cup of good strong coffee and a glass of "akvavit". Past masters mix it in rather different proportions: placing a coin at the bottom of the cup, they pour coffee into the cup until the coin is invisible, and then add snaps till it can be seen again.

Drink Deep Draughts

Akvavit for celebrations and beer for everyday consumption. Let snaps be in Denmark what champagne and brandy are in wine-growing countries, then beer is the Dane's *vin ordinaire*. For this there are no special rules, other than that beer should be drunk in deep draughts; and no special excuse, except a thirst and a liking for the savour of malt and hops. Lovers of beer are not divided by nationality; though it would be at variance with the facts to deny that the Dane, in his heart of hearts, is proud to know that Danish beer is sold in Alaska and Singapore, in San Francisco and Brisbane, in Buenos Aires and Istanbul. But he will try to disguise his feelings by declaring that it is a shame to export good beer.

And as if it were not enough to deliver beer to five continents, the Danes even sell their universal brewing machinery and good malt for beer production abroad. Dry yeast, a by-product of snaps, is also exported.

Where in the world can a man directly subsidize the cause of art and the furtherance of science by simply drinking a glass of foaming beer? He can in Denmark. The leading breweries make vast contributions to such publicly useful objects, and one of them even spends *all* its profits for the good of art and science. The company has no shareholders, but is owned by a foundation.

Beer and snaps for big men. But little ladies are not forgotten. Vines will grow in Denmark, but the grape does not ripen in the climate. Fruit-growers have found a remedy for this by supplying their products to a fruit-wine industry which quenches the thirst of the gentle sex, and indeed serves an ever-growing clientele abroad.

Much of this industry is of recent growth; but there is one firm which has been making cherry brandy—under the same family management—for more than a century. The product is world-renowned; and only a minute proportion of the output is reserved for the ladies of Denmark. The rest goes abroad.

Successful Secret Research

Just as the Flemish descendants of Gambrinus must submit to Danish specialization in beer, so, now, the English and the Scots are confronted with Danish gin and Danish whisky. It is the akvavit distilleries—the sole licensed producers of akvavit in Denmark—which, after years of secret research, have entered the lists against the British. The presumptuous Danes have even arranged tasting tests for distinguished experts, who were unable to distinguish the Danish gin and whisky among samples of international brands.

When this is the case, the Danes cannot be blamed for wishing to share their drinking habits with all the world.

The Investment Climate in Denmark

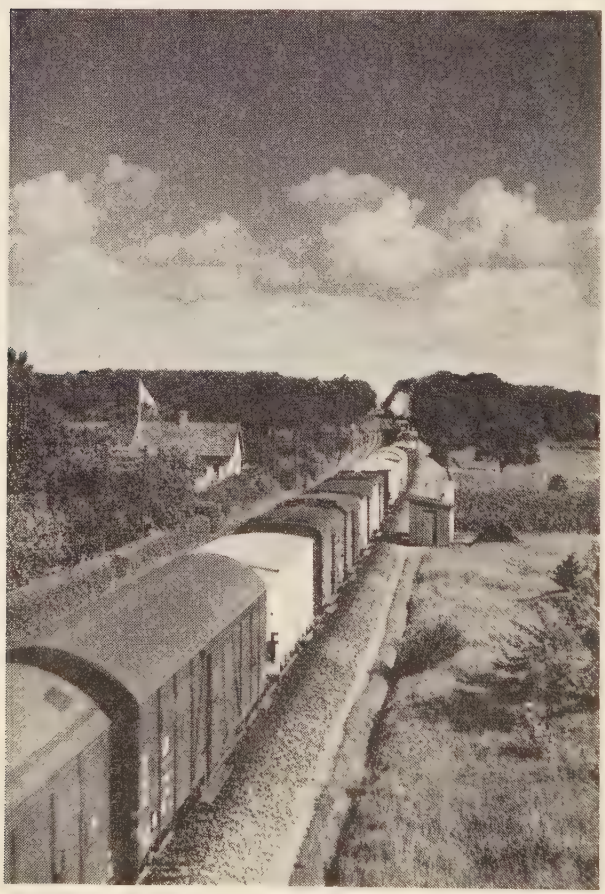
By Jørgen Jensen, cand. polit.

Denmark's economic structure is changing in character. The manufacturing industries are taking an increasing share in employment and exports, and further expansion and development is needed.

To many people Denmark is a typical agricultural country, well known as a big exporter of high-grade livestock products, principally butter, bacon, cheese, and eggs. She is less well known as an industrial country and exporter of manufactured goods, though a wide range of specialized products are marketed in many countries. Denmark has a fine industrial tradition. Her modern manufacturing industries date from the last quarter of the nineteenth century and there has been a considerable expansion of industrial manufactures and exports since.

In recent years, manufactured goods have made up about one-fifth of the national product—as much as agricultural products. Exports of them have expanded rapidly, especially since the war, and now comprise over 40 per cent. of all exports. The amount in 1957 will exceed 3,000 million kroner, roughly equal to £150 million sterling or 425 million dollars. The annual value of industrial production is about £720 million or 2,000 million dollars.

The thoroughness of the training given helps to explain the high standard of Danish workmanship (see article "Training Backed by Tradition" in DFOJ No. 22)



There is a well-developed network of communications. Railways total about 3,000 miles (5,000 kilometres), and roads double that length

The serious need for an expansion of the manufacturing industries is due not only to general technical and economic developments which underlie industrial expansion everywhere; in Denmark there is also a compelling reason in population trends. The productive age groups will increase much more rapidly in the next ten years than in the last, as the wartime "bulge" reaches working age. Furthermore, agriculture has been giving up labour to urban industries for the last 10–15 years and is unlikely to be capable of employing a bigger labour force than at present. Measures favouring the national agricultural industry now in force in nearly every country also limit the expansion of Danish agricultural exports and hence agricultural employment.

Foreign trade plays an extremely important part in Denmark's economy, since she lacks most of the industrial raw materials and so must import them, paying for the imports by exports and shipping earnings. The future expansion of the manufacturing industries must make a

considerable contribution to an expansion of Denmark's earnings in foreign currency.

Both industry itself and wide circles outside it appreciate the need for an industrial expansion for the reasons indicated. There would be no point in denying that it would naturally like this expansion to take place chiefly through its own efforts and resources.

Mutual Advantage

But at the same time the view is widely held in industrial circles that the current problems and responsibilities associated with future industrial development may be so great that collaboration with other countries may be both desirable and necessary. Foreign assistance must not take the form of subsidies or grants. It must rest on sound economic and commercial principles, to the benefit both of Denmark and of foreign investors.

A number of foreign firms have previously invested in Danish industry and have regarded such investments as valuable. Should other firms wish to follow in the footsteps of the first the existing Danish industries will look favourably and objectively at the matter. The following points will illustrate their position.

The Danish economic system is based on free enterprise and industrial undertakings have no desire to invoke Government aid. Foreign investors must therefore operate on an equal footing with Danish industrial enterprises, obtaining no special advantages or facilities not obtained by Danish industrial firms themselves.

In several industrial sectors at present there is an acute shortage of highly skilled labour which limits the possibility of industrial expansion. This is particularly true of the engineering and shipbuilding industries. New investments in these industries, financed by foreign capital, would not contribute to any real expansion of production, employment, or exports, and would only involve a transfer of production from existing to new establishments. Where such conditions obtain, Danish industrialists do not consider that there is any need for foreign investment. Other special conditions may exist to make them sceptical of the advisibility of foreign investment. A general condition applying to new investments of foreign capital is that they must give exceptionally good returns in terms of foreign currency. Economic developments in recent years have compelled the Danish Government to restrict the volume of economic activity, both consumption and

This evening picture from the busy Town Hall Square shows a characteristic feature of go-ahead Copenhagen

investments. Unless investments of capital from abroad had a very beneficial influence on earnings of foreign currency they would, in effect, be getting favourable treatment at the cost of the Danish economy.

Equality under Treaty

There is no doubt that Denmark offers foreign investors many excellent terms. Our country rests on a centuries-old democratic social structure with firmly based political and administrative institutions. The Constitution and legislation guarantee, through the independence of the courts and in other ways, that Denmark is a legally responsible State respecting civil liberties and rights of property. In treaties with many countries, foreigners are guaranteed equality with Danish citizens in, for example, investment and taxation. A detailed exposition of these rules and regulations is given in a pamphlet, *Investment of Foreign Capital in Denmark*, just issued by the Danish Government.

The Danish people are well educated and have a relatively high standard of living. There is compulsory education for children and a substantial proportion of the juvenile population receive technical or other vocational education after the school-leaving age. Vocational training of workpeople often takes four or five years and Denmark has a reputation for well-qualified workers skilled in producing quality goods. There is a well-developed and stable system of labour relations. The Technical University and other institutions carry out research on a high level.

Denmark is relatively poor in natural resources, but as already indicated there is an appreciable import of raw materials and manufactures. She is well situated in relation to the oceans and has excellent communications by sea, air, and rail to the other Scandinavian countries, the rest of Europe, and other continents. Raw materials are subject to no tariffs and few import restrictions, and manufactured goods are not greatly protected. Denmark has a name for being the country with the world's lowest tariffs.

Cooperation and Considerations

Traditions and interest predispose Denmark to cooperate closely with other countries—economically and politically—in the United Nations, the Organization for European Economic Cooperation, the European Payments Union, the General Agreement on Tariffs and Trade, the International Monetary Fund, and other international organizations, where she advocates liberal economic policies which have wide public support. She is a small country with only four and a quarter million inhabitants.

Within the frames of the Organization of European Economic Cooperation Denmark takes part in the attempts aiming at establishing a European area of free trade connected with the common market of "the six countries"; she is also considering a report, worked out at Government level, concerning the possibilities of establishing a common Scandinavian market covering about 70 per cent. of the mutual trade between Denmark, Sweden, Norway, and Finland. The rapid increase in population will give an expanding Danish home market. A high social standard ensures a relatively stable and strong demand for many industrial products.

It is an established fact that Denmark is increasingly developing into an industrial country and faces a period in which extensive investments must be made.

Specific details of these and other important factors which international firms must take into consideration in connection with plans for investment in Denmark are obtainable from the Ministry of Commerce, Industry and Shipping, Slotsholmsg. 10, Copenhagen K.

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The Department establishes contact between Danish exporters of industrial products and foreign countries, acts as an industrial chamber of commerce and is in this respect authorized by Danish and foreign authorities to assist in the issue of export documents such as certificates of origin, consular invoices, etc. . The Department is ready to render assistance in all export questions concerned with Danish industry, and you are cordially invited to apply to the Department at this address.

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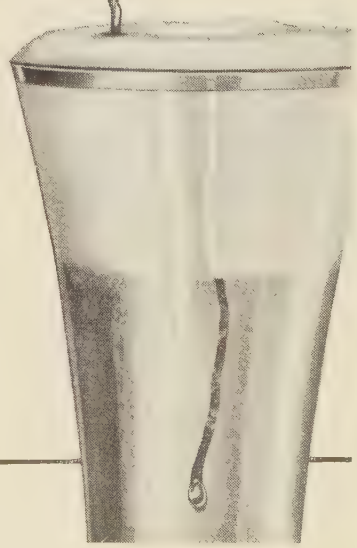

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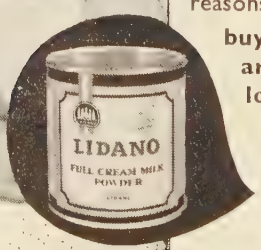

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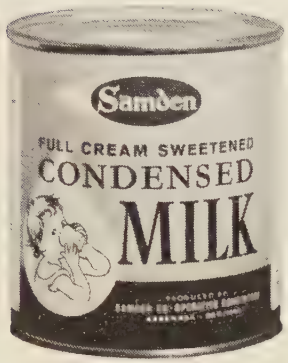

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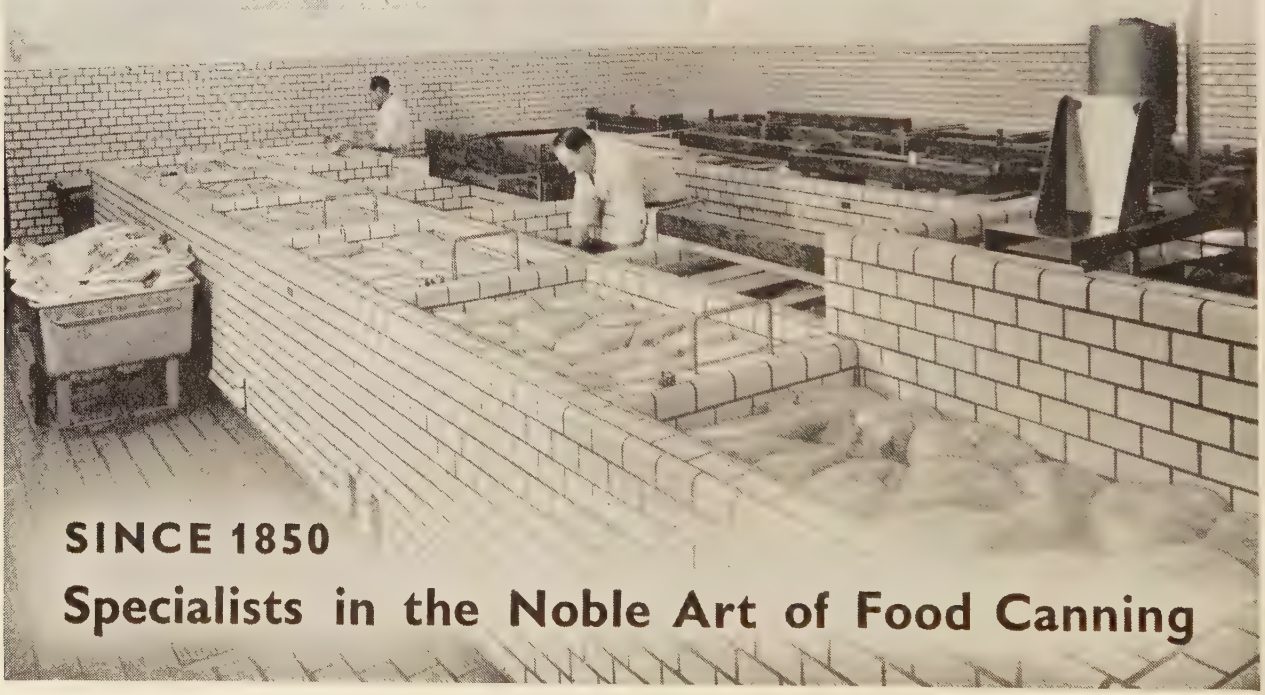

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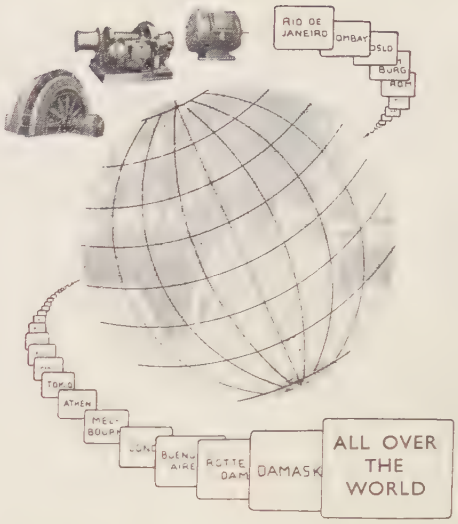

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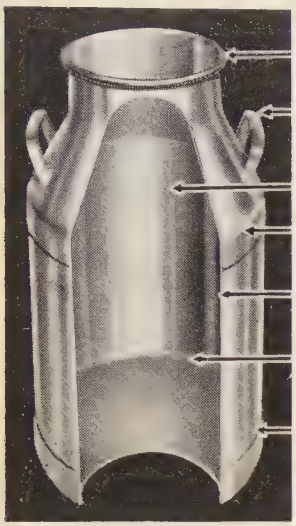

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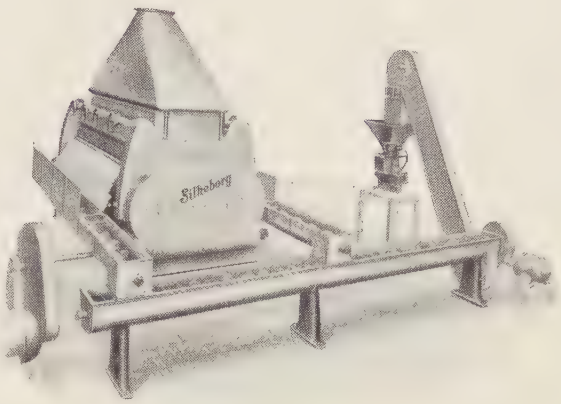

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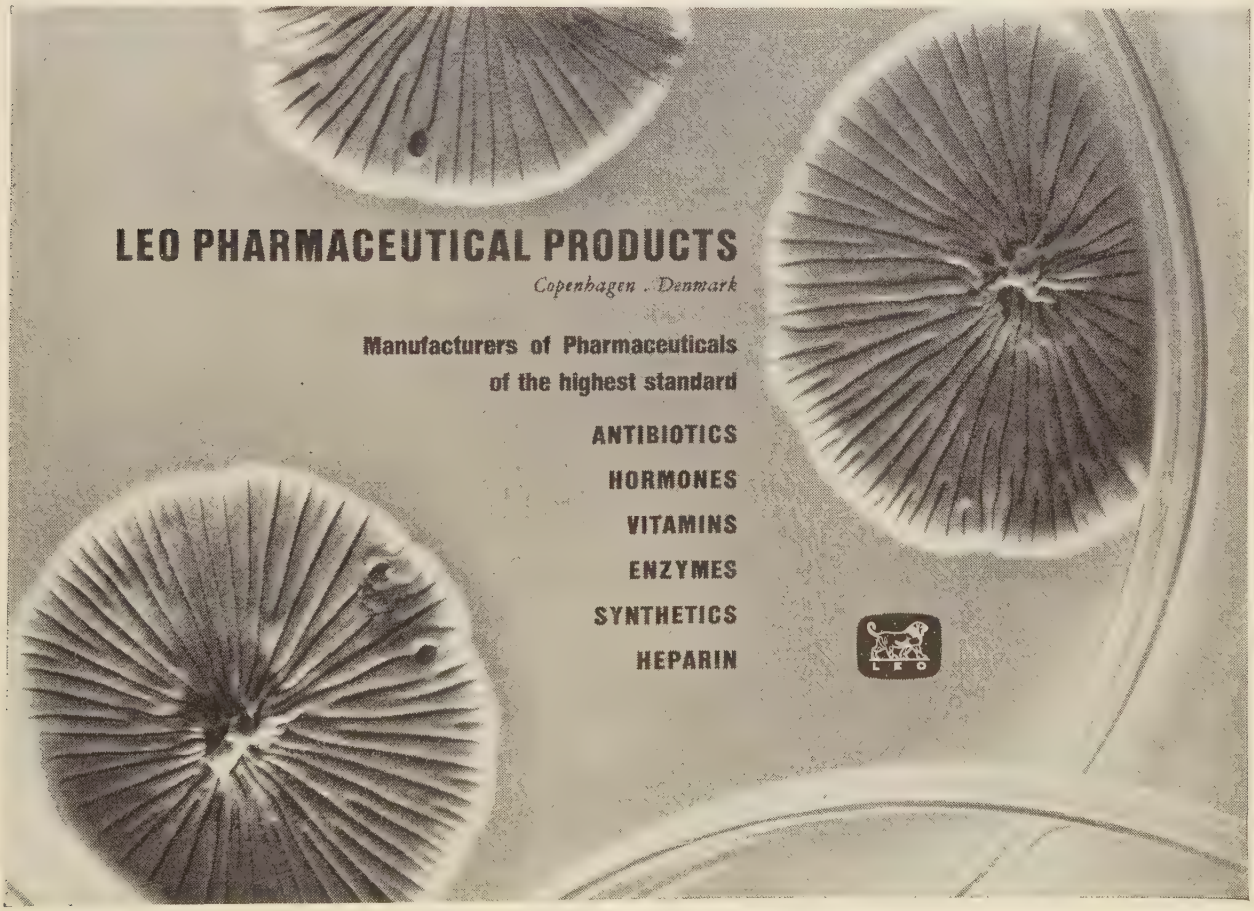

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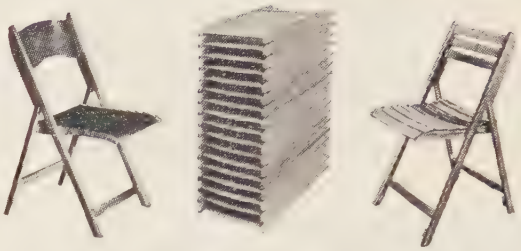

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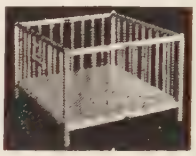

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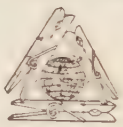

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